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ABSTRACT

As a Title III project of the Elementary and Secondary Education Act, the Clarksville-Montgomery County Schools (specifically St. Bethlehem School) developed this resource guide for outdoor education in grades 1-6. The concept stated by L. B. Sharp--"That which can best be taught in the out-of-doors should be taught there"--provided the focus for the guide. Activities are presented for science, social studies, language arts, mathematics, art, music, and health and physical education for all 6 grades. The activities listed are those which the staff felt could be test taught out-of-doors and yet remain within the existing curricular organization of the school. (DK)

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"THAT WHICH CAN BEST BE TAUGHT OUTDOORS"

AN OUTDOOR EDUCATION GUIDE FOR

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ST. BETHLEHEM SCHOOL
CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS
CLARKSVILLE, TENNESSEE

PROJECT REACHIGH
Outdoor Education
PL 89-10 TITLE III

BY
THE FACULTY (1967-1968-1969)
SAM H. JOHNSON, COORDINATOR
MRS. EVELYN BELL, PRINCIPAL

Louise E. Donaldson - George W. Donaldson, Editors

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INTRODUCTION

Many years ago, L. B. Sharp - generally known as the American Father of Outdoor Education, said that he looked forward to the day when the entire faculty of an American school would study its entire curriculum in the light of his dictum, "That which can best be taught in the out-of-doors should be taught there." Over the last two years, the faculty of the St. Bethlehem School has done just that. To our knowledge no other American school has done so, certainly not in the intensive fashion which culminates in this publication.

The Outdoor Education phase of Project REACHIGH (a Title III, ESEA project) began with an inservice workshop held at the St. Bethlehem School site on August 7-11, 1967. A systematic series of in-service activities followed over the two-year period. These have included:

1st Fall Workshop - October 28-29, 1967 at Youth Activities Station, Land Between the Lakes;
1st Spring Workshop - May 18-19, 1968 at Youth Activities Station;
Preliminary Writing Workshop - June 10-20, 1968 at St. Bethlehem School;
2nd Fall Workshop - November 9-10, 1968 at Youth Activities Station;
2nd Spring Workshop - May 3-4, 1969 at Youth Activities Station;
Final Writing Workshop - June 9-13, 1969 at St. Bethlehem School.

In addition, the following activities on the part of Mr. Sam Johnson, Coordinator of Outdoor Education, and various members of the faculty have contributed to this document, although less directly than the workshops listed above:

Visits to Outdoor Education Centers in Illinois, Wisconsin, Texas, New Mexico, Tennessee and Missouri;

Attendance at two annual meetings of the Council on Outdoor Education and Camping;

Consultations with University personnel;

Exchange of published materials with outdoor education personnel from over the nation.

A unique feature of the processes which have resulted in this publication is the fact that the results of the Preliminary Writing Workshop were duplicated and used for an entire year by the teachers before they were generally circulated. Thus, most--if not all--of the activities described have actually been tried out by the teachers who wrote about them.

It has been a genuine pleasure to work with Mr. Johnson; Mrs. Evelyn Bell, Principal; and the very professional as well as hospitable teachers of the St. Bethlehem School. While no one can profit from such a project as much as those who actually worked in it, we hope that the product will benefit others. Perchance, they may even go and do likewise!

Louise E. Donaldson
George W. Donaldson

FOREWORD

This Resource Guide has been prepared by the teaching staff of the St. Bethlehem Elementary School under the auspices of Project REACHIGH, a Title III ESEA Project funded through the Clarksville-Montgomery County School System. It has been published and made available as part of the dissemination efforts of this project.

It is not intended as a "recipe book" which may be followed step by step. The activities listed are ones the staff felt could be best taught outdoors and stay within the existing curricular organization of the school.

Much time and effort has gone into the writing of the Outdoor Education Guide.

Special acknowledgement is given to the faculty of St. Bethlehem School:

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to the Principal, Mrs. Evelyn Bell;

to the Director of Clarksville-Montgomery County Schools, Mr. William H. Sanford;

to the Reachigh Administrative Staff;

to my Secretary, Mrs. Cecille Powers, for her perseverance and efficiency;

to Consultant, Mr. Morris Riggs, Associate Professor, Department of Botany - Lee College.

A very special acknowledgement to Dr. George W. Donaldson, Professor of Outdoor Education at the Lorado Taft Field Campus, Northern Illinois University, and his wife Louise E. Donaldson, who have served as consultants and editors for the guide, for their dedicated, and patient help.

Sam H. Johnson
Coordinator of Outdoor Education
Project REACHIGH

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Unit I - Plants

Concept A

PLANTS DIFFER IN COLOR, SIZE TEXTURE, SHAPE, AND LEAVES

Outdoor Activities:

1. Have children plant a variety of seeds to show that plants differ as the seeds differ. What are some of the differences in these plants? How are they the same? What might be some other differences if other seeds were used?

2. Take the children on a nature walk. Have them observe the differences in the plants they see. How many different kinds of leaves can they find? How many different sizes and shapes?

3. Let the class gather a variety of leaves to show differences in size, shape, and vein pattern. Place them under a sheet of paper and rub with a crayon. Do this on a sidewalk for an interesting background effect. (Use plaster models of leaves, if available).

4. Have the children gather and compare stems and roots of plants. Even though these parts are different, the plants are constructed basically the same.

5. In the fall let the children observe the different colors of the leaves. Have them collect various colors of leaves and paste them, collage-fashion, on a paper where a tree trunk has been drawn. See how many different colors can be found.

Related Activity:

1. Have the class make a collection of a variety of leaves. Place a leaf on a sheet of ozalid paper measuring 1/2 inch larger than the leaf. Place paper and leaf on clip board. Put a sheet of glass on top of paper and leaf. Place in sun for 20 seconds. Then remove glass and leaf and place ozalid paper in glass jar in which a small container of ammonia is placed. Seal top and leave about 5 minutes.

Concept B

PLANTS GROW FROM SEEDS

Outdoor Activity:

1. Have the children plant a variety of seeds. Do most of the seeds come up? Where did the plants come from?

Related Activities:

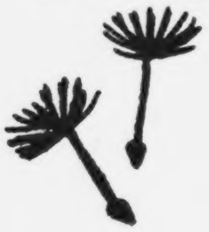
1. Ask the children to bring in a variety of seeds, ranging in size from avacodo to apple seed. How large do you suppose seeds can be? Plant them. Does the bigger seed necessarily make a bigger plant?
2. Let the children observe differences in shape and size of seeds.

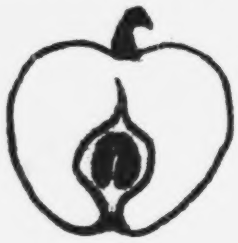
Concept C

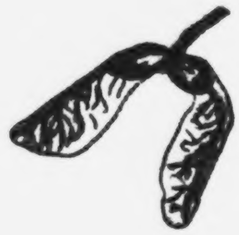
SEEDS ARE SCATTERED IN DIFFERENT WAYS

Outdoor Activities:

1. Have the children pick dandelions that have gone to seed. Let the children blow on them. What else can scatter the seeds by blowing them?
2. Put a seed on the ground. Fill a jar with water. Rapidly pour water to the side of the seed to show how it is washed or carried by the force of the water.







Concept D

PLANTS NEED SUN, WATER, AND GOOD SOIL TO GROW WELL

Outdoor Activities:

1. Have the children plant three seeds in a convenient place. Have them give one plant water and sun, give one plant sun but no water, and give one plant water but no sun. Let them observe the growth rate of each plant.
2. Let the class plant bean seeds outside in a shady place, in a sunny place, in dry soil, in moist soil, in good soil, in poor soil. Make a chart to show the differences in growth. Why don't wild seeds always grow where they fall?
3. Place box with a small hole in the top over a healthy plant outside. What happens to the plant? Why?

Concept E

MOST PLANTS ARE MADE UP OF THREE BASIC PARTS: STEM, LEAVES, AND ROOTS.

Outdoor Activity:

1. Have each group of four or five children find a plant. Observe the plant to see the three main parts in each one. Take a plant apart to show that you can actually divide the plant up in this manner.

Related Activity:

1. Plant a bean seed next to the wall of a glass box or jar. As the plant grows, children can observe the formation of roots, stems, and leaves. Use a petrie dish with damp towel and show very tiny roots (not ordinarily seen).

Concept F

TREES AND OTHER PLANTS PROVIDE HOMES FOR INSECTS AND OTHER ANIMALS

Outdoor Activity:

1. Take the class on a nature walk to find animal homes, such as bird nests, squirrel nests, a cocoon, wasp nests, webs, etc. (Relate to Unit II, Concept A, Outdoor Activity 5)

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Plants Grow and Change -	Eye Gate Co.
Plants -	Eye Gate Co.
Plants and Seeds -	Eye Gate Co.
What Is a Plant? -	Benefic Press
Homes (The Wonders of Nature Series) -	Eye Gate Co.
The Story of Seeds -	Eye Gate Co.

Film Loops:

5, Seed Dispersal -	Walt Disney
2, Birds Building Nests -	Walt Disney

Transparencies:

Science 5 P - How Do Plants Grow?
Science 49 H - Major Organs of a Plant

Grade I
Science
Unit II

Unit II - Animals

Concept A

ALL ANIMALS NEED FOOD, WATER, AND HOMES

Outdoor Activities:

1. Have the children prepare several animal feeding or salt block stations in remote areas of the school ground. Make a muddy area around the stations so that domestic and wild animal tracks will show.

2. Take a field trip to the feeding station. Use a clue chart to discover which animal came to eat the night before. Each group should make a list of animal tracks identified. Return to the classroom and compare for accuracy and completeness.

3. Take the children on a walk in the woods in the winter to watch for animal holes. By excavating some of the holes the children may find what animal has made his winter home there and also may discover some of the food the animal has stored.

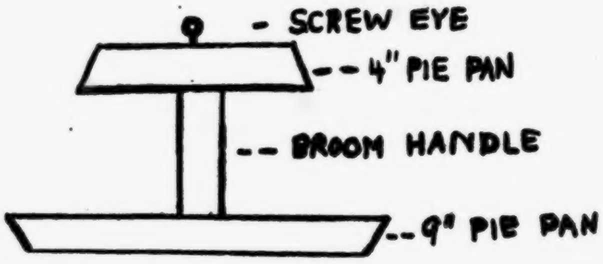
4. Have children observe various types of homes (bird's nest, chicken coops, dens, barns, etc.)

5. Have children take a bird's nest apart to see what it is made of. Sort the materials - twigs, mud, thread, cloth, snake skin, etc. Count the pieces to show how many trips the bird must have made. A magnifying glass will show the parts of the nest better.

6. In the spring, have the children lay out strings, thread, cloth, etc. for the birds to use in building their nests. Observe.

7. Let children plant a bird's nest and see what grows from it. What else do you think the bird might have picked up while building the nest?

8. Have children make a bird feeder - put up near a window. Let them observe how the birds pick up their food, how their beaks are shaped, which seeds or foods birds take. Suggested food for birds: suet, meat, pieces of apple or other fruit, sunflower seed, bird seed or bread crumbs. Feeder can be made by using a 9" pie pan joined to a 4" pie pan by a 6" piece of broom handle.



9. On a nature walk have children look for animal homes in holes in the ground, under rocks, under bark, etc. What kinds live in trees, on the ground, etc.? Why did they choose that place to live? Observe birds in the fall then watch to see which ones leave and which stay. Where do they go? Why?

10. Take children on a walk to find an earthworm, Keep the earthworm in a jar filled with moist, dark, loose soil. Cover the jar with a dark paper which can be removed for observation. What does this show about an earthworm's home? What does he need in order to live?

11. Take children out-of-doors to make an ant farm by filling a gallon jar loosely with soil and sand. Collect a variety of ants from the same hill. They will need a few drops of water, sugar, crackers, pieces of fruit, and honey daily. Observe the ants.

Related Activities:

1. Study pets. Discuss the importance of food and homes for pets. Help the children see that it is our job to take care of pets.

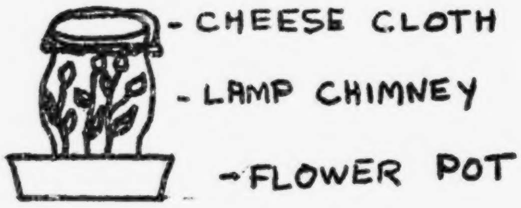
2. **Drawing A** - Have class make an insect cage. Use a lamp chimney, flower pot of soil, cheese cloth, twigs with leaves, and string.

   a. Stick the twigs into the soil in flower pot.

   b. Place the lamp chimney around the twigs with the bottom of chimney in the soil.

   c. Fasten a piece of cheese cloth over the top of the chimney with a piece of string.

   Let children observe insects as to the appearance and habits.



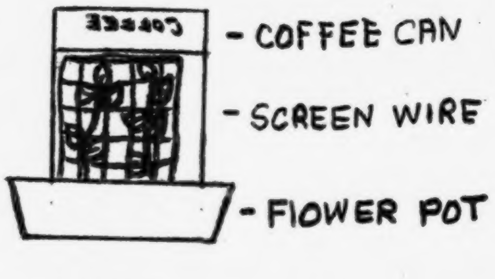
Drawing B - Use wire window-screening, a flower pot of soil, an empty coffee can and twigs with leaves on them.

   a. Stick the twigs in the soil in flower pot.

   b. Curve the screening around twigs, overlapping the sides of the wire.

   c. Push one end of the screen into the soil.

   d. Turn the coffee can upside down and place it over the top of the screen.



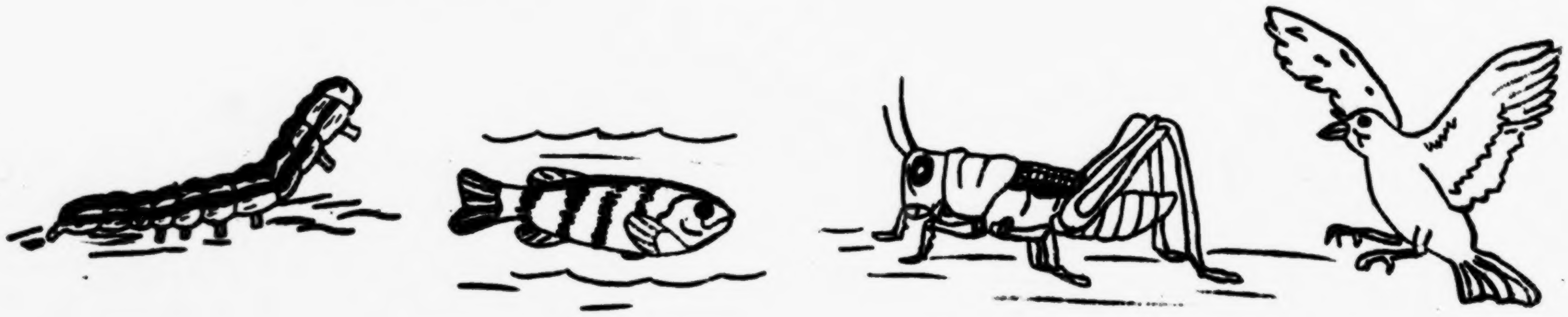
Concept B ANIMALS TRAVEL IN SEVERAL DIFFERENT WAYS

Outdoor Activities:

1. On a nature walk, have children observe birds in flight. Discuss their different wing positions, how the birds glide, etc.
2. Let the class observe an earthworm as he moves. A Milk straw, folded accordion style, can be used to show how a worm moves.
3. Have class observe a fish as it swims.
4. On a nature walk, encourage children to find frogs and grasshoppers and watch them hop.

Related Activities:

1. Make a chart, in table form, categorizing movement of animals. Children may cut out, draw, or find magazine pictures to use on chart.
2. Let children find tobacco worms. Place them in a shallow pan of wet tempera, and watch the patterns and designs their body movements make.



Concept C ANIMALS ARE BORN AND GROW UP IN DIFFERENT WAYS

Outdoor Activities:

1. Take children outside to collect some monarch butterfly caterpillars. Put each one in a quart jar with twigs from a milkweed, or similar plant. Cover the jar with cheese cloth and secure with a rubber band. Observe the changes the caterpillar goes through in becoming a butterfly. Further information should be found on other types of caterpillars and the kind of food they should be given.

2. Take a trip to a near-by pond to collect frog eggs and tadpoles. Put them into an aquarium, along with some scum from a pond for food. The tadpoles will grow in this order; back legs, then tongue and lungs. His tail shrinks as he consumes the food supply therein. When he is grown, he will need insects to eat.

3. Take a field trip to a farm to see a setting hen. This will show how chickens are hatched naturally in contrast to artifical incubation. Children can also note the similarities between the hen and the incubator.

Related Activities:

1. Set up an incubator and watch some eggs hatch. Use any number of fertile eggs, wooden box 8" x 12" x 12", electric light bulb with electric cord; thermometer, small bowl, glass lid. Suspend light in box using a bulb that maintains temperature at 102 degrees. Place water in bowl to provide humidity. Place all the eggs in the box. Eggs should be turned twice a day to prevent the yolks from sticking to the shell. Cover the box with the lid. Period of incubation is approximately 21 days. One day before the eggs hatch, hold one near your ear and hear the chick peeping inside. A special classroom incubator may be used to hatch eggs. Before the chicks hatch, consult the owner of a hatchery for information about special care that baby chicks need. Set on Tuesday or Wednesday to allow for early or late hatching.

2. Learn names of adult and baby animals.

Concept D ANIMALS GET FOOD FROM ANIMALS

Outdoor Activity:

1. Take a field trip to a dairy farm to watch the milking process. If possible, let the children participate in milking. Explain that people used to drink it as it came from the cow, but today we put it through a process to purify it.

Related Activities:

1. Take some of the raw milk from the dairy farm and churn it to show the variety of foods we can get from one animal and how one food can be changed.

2. Have children visit a cheese plant to see how cheese is made from milk.

Concept E ANIMALS HAVE DIFFERENT KINDS OF COVERINGS

Outdoor Activity:

1. Take a field trip to observe various types of animal coverings (feathers, hair, fur, etc.).

Related Activities:

1. Let children collect, mount, and display different types of feathers found on trip.

2. Let children find magazine pictures of animals with different types of coverings, then make a chart for bulletin board display.

3. Have animals with a variety of coverings brought into the classroom. (Chicken, fish, turtle, cat or dog, hamster, etc.) A resource person could be used here. Discuss why animals have different coverings.

4. View available films and filmstrips pertaining to animals.

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Animals Grow and Change-	Eye Gate
How Animals Live -	Eye Gate
What Is a Bird? -	Benefic Press
What Is a Butterfly? -	Benefic Press
What Is a Turtle? -	Benefic Press
Finding Out About How Animals Live -	Society for Visual Education
The Ant, A Social Insect -	Popular Science Company
Around Water -	Eye Gate
Birds of Forest and Woodland -	Encyclopedia Britannica
Birds of Villages and Towns -	Encyclopedia Britannica
My Dog Spot and I (Our Pet Series) -	Eye Gate
Our Aquarium (Our Pet Series) -	Eye Gate

My Horse Dobbin (Our Pet Series) -	Eye Gate
Blackie, My Dog " " " -	Eye Gate
My Chick " " "	Eye Gate
My Turtle " " "	Eye Gate
My Pet Canary, Dickie, (Our Pet Series) -	Eye Gate
My Cat Taffy " " "	Eye Gate
My Bunny " " "	Eye Gate
Birds and Their Songs (With Record)	Museum Extension Service.

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Birds
Cats
Cows
Fish
Looking for Animals
Rabbits
Billy Beaver
Glider, The Flying Squirrel
Jimmy Raccoon
Melvin Otter
Needles Porcupine
Rudy and Trudy Bear
Woody Woodpecker
Ann Visits the Zoo
The Turtles
A Walk in the Woods
The Adventures of Pete and His Dog
Brush, the Red Squirrel
Hoppy, The Rabbit
The Lazy Bear Cub
Mrs. Crackles Becomes a Good Citizen
Butterflies Grow
Toads Grow
Birds Grow

Records:

Birds, Beasts, Bugs and Little Fishes
Carnival of the Animals
Dance a Story About Noah's Ark
Dance a Story About Little Duck

Transparencies:

Science 5 B - Animal Resources - Animals Need Food
Science 5 C - Animal Resources - Animals Need Water
Science 5 D - Animal Resources - Animals Need Homes
Science 5 J - 5 O - Animal Resources - Different Animals Choose Different Homes
Science 44 H - Animal Life - Pond
Science 44 I - Animal Life - Forest
Science 44 K - Animal Life - Life Cycle of the Frog
Science 44 L - Animal Life - Life Cycle of a Moth
Science 44 M - Animal Life - Babies From Eggs
Science 44 P - Animal Life - Hibernation
Science 44 N - Animal Life - Mammal Babies
Science 44 R - Animal Life - Food Storage
Science 44 W - Animal Life - Domestic Animals
Science 44 V - Animal Life - Food and Clothing

Unit III - The Universe

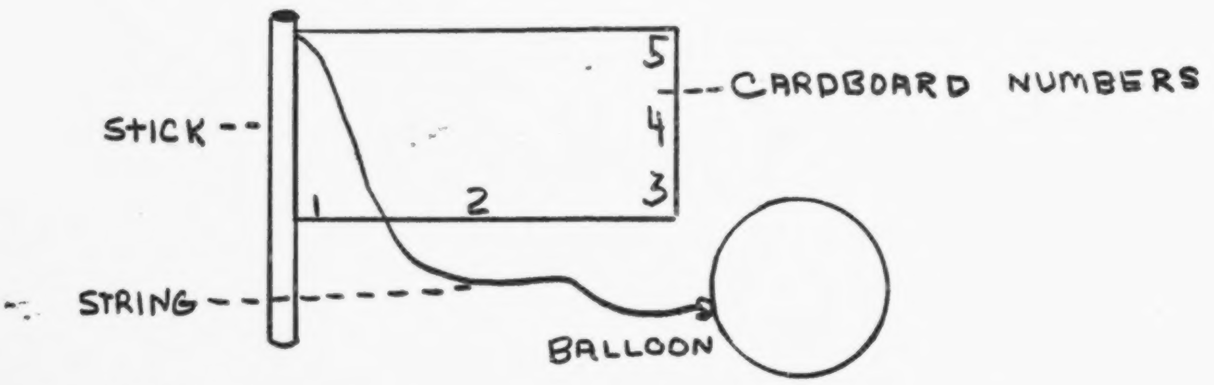
Concept A AIR IS A SUBSTANCE OF WHICH WE ARE AWARE OF IN DIFFERENT WAYS

Outdoor Activities:

1. On a nature walk have the class observe the effect of wind, or blowing air, on different things such as smoke, paper, trees, stones, etc.

2. Have children build kites or bring one to school to show how wind helps make things fly. A pin wheel can also be used to show how wind can push things or cause movement.

3. Have children make a wind speed measurer. The position of the string indicates the strength of the wind.



Related Activities:

1. Crumple a sheet of paper, stuff it into a dry tumbler, and thrust the inverted tumbler into a container filled with water. Do not tip tumbler. Lift the tumbler out again, pull out the paper and let children discover that it is dry. What kept water from going into the glass? Discuss how the air in the glass has kept the water out. If the glass was tipped, bubbles or "air" would escape and the glass would fill with water.

2. Blow up a basketball or balloon. Let the children feel the ball become harder and firmer as air is packed into it.

Concept B **FIRE NEEDS AIR TO BURN**

Outdoor Activity:

1. Build a small fire on a gravel or dirt area which has been surrounded with brick or stones. Smother the fire with a large glass jar or large tin can. This shows the class that air is necessary for fire to burn.

Related Activity:

1. Light two candles of equal height. Put a little jar over one candle, a large one over the other. What happens? Why? Which candle goes out first? Why?

Concept C **THE SUN IS A STAR THAT ALWAYS SHINES. IT SEEMS TO MOVE BECAUSE THE EARTH TURNS, THUS GIVING US NIGHT AND DAY.**

Outdoor Activities:

1. On a cloudy day take the children outside and discuss where the sun has gone. Is it still shining?

2. Take the children out as early as possible in the morning to see where the sun is coming from. Go out again in the afternoon to see where it has gone. Why did this happen?

Related Activity:

1. Shine a flashlight on a globe. Turn the globe, showing that only half the globe is lighted at any time and that this area changes as the earth turns. To explain this even further, you can put a stick in some clay on one spot on the globe. As the globe is turned they can see more clearly what happens to the stick.

Concept D

AS THE SEASONS CHANGE, SO DOES THE WEATHER

Outdoor Activities:

1. Record the outside temperature several days for each season. Make a chart to use for comparison and discussion.

2. On a sunny day and a cloudy day, go outside to observe the different cloud formations. Discuss what objects the clouds look like. Notice how they are shaped differently on different days. Have children draw them.

Related Activity:

1. Make a chart to show daily weather changes for each month. Make a weather calendar by putting up a picture of the weather, a cloud, rain drops, sun, etc., on each day's space. Compare one month from each season.

Concept E

EACH SEASON AFFECTS THE GROWTH AND LIFE PATTERNS OF PLANTS AND ANIMALS

Outdoor Activities:

1. Take a field trip to a woods to observe the trees, plants, pond, presence of animals and insects. Do this each season to observe the changes the weather has made on all of these things.

2. Find a tree that the class can observe in the early Fall. Over the year watch it as the leaves turn and fall. Observe that it has buds before the leaves fall. Watch the buds swell and open in the Spring. Look for the disappearance and reappearance of animals that live in the tree.

3. Take a census of the birds in the neighborhood in the Fall, Winter, and Spring. Talk about the reasons for migration.

Concept F

SHADOWS ARE FORMED BY SOMETHING BLOCKING OUT LIGHT. THE LENGTH OF THESE SHADOWS DEPEND ON THE POSITION OF THE LIGHT IN RELATION TO THE OBJECT.

Outdoor Activities:

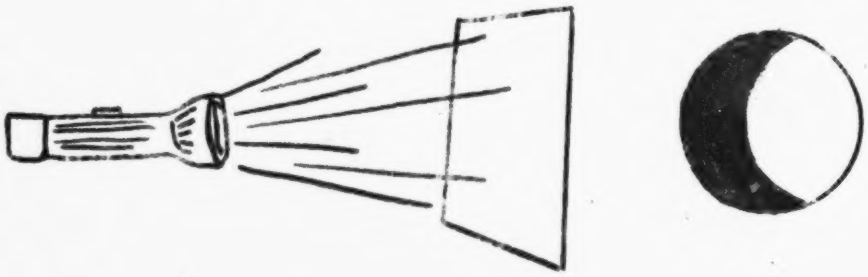
1. Put a stationary stick in the ground. Have children measure the length of the shadow at different times of the day. Discuss why the shadow appears in a different place on the ground at these different times.

2. Take children on a walk and compare the different shadows made by a flagpole, a post, a tree, a building, car, person, etc. Where does the light come from? Where does it fall? How does the size of the shadow compare with the size of the object?

Related Activities:

1. Hold a flashlight in different positions over a book that is standing up. Show how the shadows change as the position of the flashlight changes.

2. Put a piece of paper, or a ball, between a flashlight and a globe. Observe how the object blocks out the light on the globe, causing a shadow or an eclipse.



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Autumn and Winter	Eye Gate
Air, Wind and Weather	Eye Gate
Weather Changes	Eye Gate
The Earth and the Sun	Eye Gate
The Four Seasons	Eye Gate
What is a Season?	Benefic Press
Night and Day	Encyclopedia Britannica
The Seasons	Encyclopedia Britannica
Our Weather	Encyclopedia Britannica
The Night Sky	Encyclopedia Britannica

Transparencies:

Science 5 W - Water, Air and Heat - What Causes Night and Day?
" 5 U - " " " " - How Does Fire Go Out?
" 5 O - " " " " - Can You Make Rain?
" 5 P - " " " " - What Makes Snowflakes?
" 5 N - " " " " - What Makes Rain?
" 5 I - " " " " - What Makes a Kite Fly?
" 5 H - " " " " - What Makes Water Evaporate?
" 5 G - " " " " - Is Water In The Air?
" 5 F - " " " " - Can You Feel Air?
" 5 E - " " " " - What Makes a Ball Float?

Science 45 A - Weather - The Sun Is Our Source of Heat and Light
" 45 E - " - The Sun Influences Temperature.
" 45 B - " - The Shadows Change With the Position of the Sun
" 45 C - " - Time By Sun
" 45 V - " - Weather Changes With the Seasons
" 45 G - " - Melting
" 45 F - " - Thermometer
" 45 D - " - Sun Helps Us
" 45 K - " - Precipitation
" 45 W - " - Moving Air is Called Wind
" 45 S - " - We Dress for Weather
" 45 U - " - Animals Prepare for Weather

Records:

All About the Seasons
All About Spring
Weather Songs -

Unit IV - Earth

Concept A ROCKS ARE FORMED IN DIFFERENT WAYS

Outdoor Activities:

1. Take children on a walk around the school neighborhood or grounds and collect different kinds of rocks. Have each child bring back one rock, then arrange the rocks according to color, shape, and texture.

2. Find some soft rocks. Rub sandpaper or another rock against a soft rock. What happened? Glaciers, wind, and water wear rocks away in this same way.

3. Take children on a walk where different kinds of rocks may be found. Test different rocks for hardness. Scratch a piece of glass with each rock to determine the hardness of the rock. If the rock scratches the glass, put it in a pile. A hard rock will scratch glass. Scratch a knife blade with the remaining rocks. If the rocks scratch the knife blade, put them in another pile. A less hard rock will scratch a knife blade. With the rocks that are not in a pile, scratch a penny. A penny is even less hard. A very soft rock will not even scratch a penny but can be scratched by one's thumb nail.

4. Take children on a trip to a gravel pit or a road cut. Show the children a fossil. What is a fossil? How do you think it was made or formed?

5. Have children play matching games with rocks. One child holds his rock behind his back and describes it. Anyone who thinks his own rock is the same kind holds up his hand.

6. Take the children on a field trip to a local gravel pit. Observe various exposed layers of rock. Look for examples of rocks formed by sedimentation, heat, or pressure.

Related Activities:

1. Read one of the more simple books on rocks. Discuss three ways in which rocks are formed - by heat, sedimentation and by extreme pressures.

2. Have a child press layers of a sponge cake, or sponges, together with his hand. What happens? This shows how the sponge or cake becomes harder under pressure. Some rocks are formed in this manner, as layers of the earth press on layers below.

3. Melt chocolate in a pan on an electric hot plate. What does the chocolate look like when hot? Let the chocolate cool. What happened then? Some rocks are formed in much the same manner. When they get hot, they melt then take a new form. An example of this would be lava from a volcano.

4. Use a pile of construction paper about one inch thick. Have a child push the paper together from each end at the same time. What happened to the paper? Layers of rock do the same thing when pushed together under the earth.

5. Have children make a simulated fossil by using plaster of paris and an insect or leaf. Pour a mixture of plaster of paris and water into the bottom of a milk carton. Cover a dead insect or leaf with vaseline and place it on top of the plaster of paris. Cover with more plaster of paris. When it is dry, crack open and remove the leaf or insect. Observe the imprint in the plaster. This process is similar to the formation of real fossils.

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Water and Soil	Eye Gate
The Earth Is Always Changing	Eye Gate
The Air	Encyclopedia Britannica
The Earth	Society for Visual Education

Transparencies:

Science 37 G - Rocks and Minerals - Hardness
Science 37 P - Rocks and Minerals - Rocks, What Are They

Unit V - The Five Senses

Concept A WE NEED LIGHT TO SEE

Outdoor Activities:

1. Take children on a walk on the school grounds, in the wooded area. Observe the shapes of trees, footprints, bushes, clouds, leaves, and buildings. Observe different insects crawling on leaves. Discuss their special coloring. Does it protect them from their enemies? How? Observe design of veins of leaves, flowers, and butterflies.

2. Take the children to see as many as possible of the following: traffic signal, a red exit sign, a red fire box, caution lanterns around a construction project, white lines indicating street crossings, and parking areas. Discuss their meanings and uses.

3. Take a trip outdoors. Let the children practice differentiating things by their colors. Use pairs of things, similar except in color, i.e. red leaf and green leaf, brown dog and black dog.

4. Take a trip outdoors. Discuss colors related to the seasons. For example: the pale green of the leaves in Spring; the various colors of the flowers, fruits, and vegetables in Summer; the red and yellow of the leaves in Fall; and the white snow of Winter.

5. Look for designs: Leaves against the sky, bare tree limbs in Winter, color lines in a feather, drifts of snow or sand, spider web, curve of butterfly's wing, and peas in a pod.

6. Take a walk around the playground to see how many red colors (of any shade) may be seen. Continue the game with green, blue, yellow, etc. (Closely related to Art).

Related Activity:

1. Discuss people whose work clothes have special colors; policemen (blue), nurse (white), and soldier (green). Encourage the children to collect pictures of these people in their work clothes.

Concept B

WE HEAR MANY DIFFERENT SOUNDS

Outdoor Activities:

1. Take children on a walk on pavement, through the grass on the school yard, through the leaves under the trees, and on the gravel near the side of the road. Discuss, as you walk, how various ground coverings sound differently when we walk on them. Which covering is the quietest?

2. Let children pretend they are Indians and take a quiet walk over the school grounds and in wooded area to listen for nature sounds.

3. Have children listen quietly for:

    a. Animals - squirrels chattering, crickets chirping, flies buzzing, and birds singing.

    b. Weather - trees moving, wind rustling leaves.

    c. People - mowing lawns, talking, children playing.

    d. Traffic - cars and trucks, horns, whistles, tractors, and trains.

Concept C

BY TOUCHING, WE CAN FEEL HOT AND COLD, HARD AND SOFT, ROUGH AND SMOOTH, WET AND DRY, AND SHAPES AND SIZES.

Outdoor Activities:

1. Take the children on a walk in the woods. Let each child feel many objects. Encourage the children to use words such as rough, smooth, furry, silky, hard, soft, hot, warm, cold, dry, damp, and wet.

2. Take the children outside to feel the following:

    pebbles
    mud
    dirt
    bark of trees
    dandelion heads
    bricks
    a breeze blowing
    thorns on bushes
    pine cones
    warmth of sun

3. Outdoors have a class feel objects made of wood, metal, brick, and cement to notice different temperatures. Our forearms are much keener at feeling small temperature changes than our fingers and hands.

Concept D

EVERYTHING HAS ITS OWN SPECIAL SMELL

Outdoor Activity:

1. Take the children outside to smell:

    a. burning leaves
    b. earth being plowed
    c. ground after a shower on a hot day
    d. tar being poured on street
    e. chinch bug, stink bug
    f. flowers
    g. freshly mowed grass

Concept E

WE CAN TASTE BITTER, SWEET, SALTY AND SOUR

Outdoor Activity:

1. There are many things that are harmless that can be tasted out-of-doors.

   Here are some:

   blackberries and dewberries - sour
   wild cherries - bitter
   wood sorrel - sour grass
   sorghum - sweet and sour
   sugar maple sap - sweet

Concept F

WE USE ALL OF OUR SENSES TO EXPLORE THE WORLD AROUND US

Outdoor Activity:

1. Have the children use all of their senses to "discover" things on a walk through the woods, or on the playground. Then have them describe what they saw, heard, felt, smelled, and tasted.

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Records:

Light and Sounds

Unit I - Farm

Concept A

CHILDREN INCREASE THEIR UNDERSTANDING OF FARM LIFE THROUGH FIRST HAND EXPERIENCE.

Outdoor Activity:

1. Take children to a dairy farm. Let them see how the cows are milked.

Concept B

FARMS PROVIDE MANY THINGS THAT ALL OF US NEED

Outdoor Activity:

1. Have class visit a diversified farm. Observe plants and animals that produce food, shelter, and clothing (cows, hogs, fowls, fish, sheep, grain, fruits, vegetables, trees, and cotton).

Related Activities:

1. Have children cut out pictures of farm-produced products and put in booklets.
2. Have children bring in samples of wool, rocks, cotton, leather, wood, etc. Display in activities center.
3. Let children make a model farm.

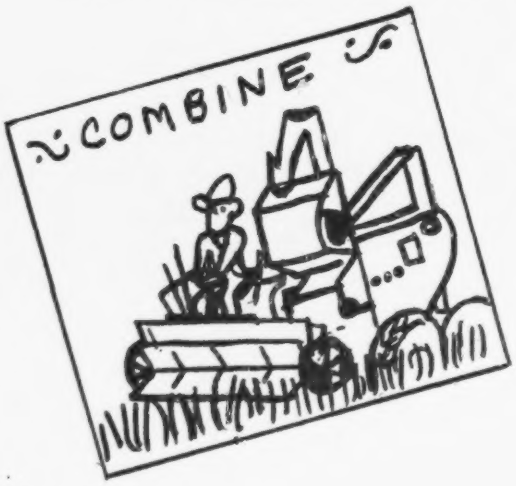
Concept C MACHINES MAKE FARM WORK EASIER

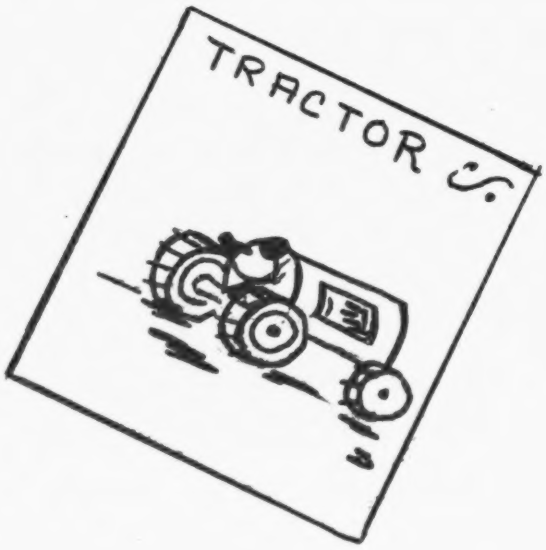
Outdoor Activity:

1. Take a field trip to a diversified farm to observe types and uses of farm machinery (tractor, plow, disc, mower, spreader, rake, combine, bailer, grain elevator, cultivator, silage chopper, wagon, bush-hog, fertilizer distributor, hay elevator, silage blower). Discuss uses of each.

Related Activity:

1. Draw or cut out pictures of farm machinery, mount and learn names of each.





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Frisky, The Colt
Porky, The Pig
Fluffy, The Goat

Transparency:

Science 44 - Animal Life

Unit II - School

Concept A — A SCHOOL PLANT IS MADE UP OF BUILDINGS AND GROUNDS

Outdoor Activities:

1. Take the children on a walk to observe the school and school grounds. Then draw a "map" to show this area.
2. Have children observe the school building. Discuss its color, size, structure, etc. Discuss the materials from which it was made. While outside, sketch it.
3. Take class on a walk and observe where the utilities come into the school. Discuss.

Related Activity:

1. Have class draw pictures of what has been observed.

Concept B — MANY PEOPLE HELP US AT SCHOOL

Outdoor Activity:

1. Have children visit and interview different people who help us at school (for example, physical education teachers, custodians, and cafeteria personnel).

Related Activities:

1. Return to the classroom and draw pictures of school personnel performing their duties.
2. Let children make up a story about school personnel.
3. Have class visit other school personnel (indoors) and do similar activities as above.

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School Bus Safety (Jr. Safety Series), McGraw

Vocabulary

Concept A STIMULATION OF THE SENSES DEVELOPS VOCABULARY

Outdoor Activities:

1. Develop the skill to listen by taking the class on a trip outdoors. Let the group stand with eyes and fists closed. Open fists, one finger at a time, as sounds are heard.

2. On a listening trip, pause for children to describe sounds as follows: a certain bird call, chirp of a katydid or cricket, hum of a bee, sound of feet on dried leaves or pavement, sound of wind rustling leaves.

3. Let children listen to nature stories out-of-doors.

4. Have children watch ripple of waves, movement of trees, birds, insects, and animals. (See Science).

5. Have each child sit on a small section of ground and focus on one sense or one thing at a time, such as a blade of grass. Look, touch, taste, smell the blade of grass. Ask each child to tell something about the blade of grass. (Use tape recorder). Put the words on the board and use in a story.

6. Have an Alphabet Scavenger Hunt. Each child or group is to find a series of natural objects chosen so that, for each letter of the alphabet, there will be an object whose name (or part of it) begins with that letter. Select five or ten letters if you wish to simplify the game.

Concept B NEW WORDS ARE LEARNED THROUGH OUTDOOR EXPERIENCE

Outdoor Activity:

1. Take children on a nature hike for the purpose of increasing oral nature vocabulary.

Related Activities:

1. Return to classroom and make experience charts.
2. Have children learn words to describe nature sounds.
3. Have children make one-sentence descriptions of experiences on nature hikes.

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Filmstrips - St. Bethlehem School:

Sounds Around Us	Eye Gate
Similarities	Eye Gate
Insects, How They Live and Grow	Encyclopedia Britannica
Alphabet	Eye Gate
Classification of Books	Encyclopedia Britannica
Differences	Eye Gate

Comparison

Concept A

MANY EXAMPLES OF NUMBER AND SIZE CONCEPTS MAY BE FOUND IN NATURE

Outdoor Activities:

1. Children collect sticks or rocks and arrange in order according to size, starting with the shortest and ending with the longest.

2. Children pick up a given number of rocks, leaves, or sticks, such as five or seven - then write the numeral in the dirt or sand with a stick.

3. Combine direction and numbers by having the children take two steps forward, four steps to the right, six steps to the left, and five steps backward.

4. Use the school grounds to explain mathematical word meanings.

    a. Is the bird high in the air?

    b. Are the airplanes higher than the school?

    c. Which is highest - the tree, the car, the school, or clouds?

    d. Is the flower high or low?

    e. Is the grass lower than the tree?

    f. Which is lowest - the grass, the car, the fence, or the airplane?

Devise similar activities for; large, small, heavy, light, near and far.

6. Have children count all the things you can see on the school grounds. Then take a stick and write on the ground the numbers for each set. After counting, classify according to sets; i.e. trees, buildings, cars, etc.

7. Children go outside to compare the size of objects. Use terms such as larger, smaller, shorter, taller, etc. In counting a sampling of the leaves, the terms more than and less than are used.

Concept B THINGS MAY BE MEASURED OUTDOORS

Outdoor Activities:

1. Have children measure shadows at different times of day.

2. After the children have become familiar with the terms inch or foot they can go outside and measure some of the following:

   a. length of the shadow of a stick,
   b. width of the sidewalk,
   c. length of the shadow of a building,
   d. length of leaves,
   e. height of various plants,
   f. length of various leaves,
   g. learn personal measurements to use as estimates. Examples: hand span, height, pace, width of stretched out arms.

3. Take children for a walk. Let them estimate how long it took to go and return.

4. Take class outside. Let one child take a quart measure and bring it full of dirt and pour in pile. Let another child bring a gallon of dirt and pour in another pile. Discuss which is the larger pile of dirt. Let the first child continue to bring another quart measure of dirt until four measures have been poured in the pile.

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Designs and Shapes

Concept A

MANY DESIGNS AND SHAPES CAN BE FOUND IN NATURE

Outdoor Activities:

1. Go outside and look at the shapes of trees. Have the children make pictures to show what they have learned about tree shapes. Trees and other landscape features may be cut or torn from colored paper. All can be pasted on light blue or green construction paper to form a pleasing "picture".

2. Designs in nature can be found in other objects such as the sun-circle, rocks-circle, the sky-semi-circle, acorns-oval. Ask pupils to sketch these designs.

3. Have class observe the different shapes of clouds. Draw these shapes while outside.

4. Let children look for different patterns in the bark of trees.

5. Have children gather leaves and make leaf prints with crayons.

6. Have class make "bees" from things collected on a trip outdoors. Children collect cockleburrs, then add bits of grass, leaves, etc. for antennae, wings, and legs. Mount the "bees" on a sheet of cardboard, construction paper, or on the bulletin board with pins. "Turkeys" made from pine cones and pipe cleaners may be made in a similar fashion.

7. Let children gather sticks, twigs, or leaves which may be glued or taped to cardboard or construction paper in the shape of trees, animals, or people.

8. Have children draw colored butterflies on thin paper. The teacher may collect all the butterflies and attach them high and low to tree trunks, flowers, and branches by sticking a pin through them. Then have a butterfly hunt and see who can find the most.

Related Activities:

1. Cut an apple crosswise and have children observe the star shape made by the core. Prepare tempera to a thick creamy consistency in a shallow pan or dish. Dip the apple half, cut side down, into the paint, then print on white paper.

2. Have children collect rocks of different shapes. Return to classroom and wash rocks. When rocks have dried, paint with tempera to make cars, bugs, turtles, etc. Add a few drops of glue to tempera to give it a gloss or sheen.

Concept B DIFFERENT COLORS APPEAR EVERYWHERE IN NATURE

Outdoor Activities:

1. Take the children for a walk in the fall to observe the different colors of nature, especially the leaves. Have them draw leaves and color them different colors as observed while walking.

2. On a nature hike, have children take white art paper. Collect different colored petals, leaves, and berries. Crush them to use for "paint brushes". "Paint" a picture.

3. Take the children on a "color" walk. One person looks for as many objects as possible that are red. Another chooses blue, another green, etc. A variation of this is to have everyone go on a "blue" walk one day, a "yellow" walk another day, and a "red" walk still another day.

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Patterns

Concept A PATTERNS OF MUSIC ARE OUTDOORS

Outdoor Activities:

1. Take children outdoors to hear sounds of music. Have children close their eyes and listen, raise their hands if they hear a sound of music, such as birds singing, crickets chirping, cows mooing, lambs bleating, bees buzzing, wind blowing, and water rippling. If the school is located in a city, children will hear sounds of traffic, trains, boats and planes.
2. Many natural objects can be gathered on a nature walk and used directly or adapted for use as instruments. Pebbles, sticks, locust seed pods, gourds, acorn caps, rocks, hollow canes, and dried grasses are among the objects that children can collect to prepare for making instruments for the rhythm or musical band.

Related Activity:

1. Use correlated pictures of birds and records of bird calls to teach recognition Then, take the class outdoors to see how many birds and bird calls the children can recognize.

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Birds and Their Songs (With Records)	Museum Extension Service

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Record 12-1, Side A
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    The Brooklet
    Little Duck

Record 12-2, Side A
    Way We Like to Travel
    Riding on an Airplane
    In a Motor Boat

Record 12-2, Side B
    Seasons We Like
    Windy Weather
    The North Wind

The Songs of Insects
Songs of the Forest
Birds on a May Morning
Voices of the Night

Unit I-Safety

Concept A

WE NEED GOOD SAFETY PRACTICES AND CAN LEARN MUCH ABOUT SAFETY OUTDOORS

Outdoor Activities:

1. Take children on a walk and observe the different safety signs on or near the school grounds, i.e. the blinking light, stop signs, etc. Discuss the use of each and why we should obey them.
2. Have children practice going to, and boarding, bus in an orderly way.
3. Discuss the way to cross a street. Then let children practice doing this outside.

Related Activities:

1. Have a policeman come out to school to talk with the children about outdoor safety.
2. Have the bus driver come and talk to the children about safety rules on the bus.

SCHOOL BUS
School Bus Stop

Unit II - Games

Concept A

GAMES CAN BE INVENTED AND PLAYED WITH MATERIALS FOUND OUTSIDE

Outdoor Activities:

1. Go on a treasure hunt. Give small groups of children a short list of things to find, such as, a leaf, two twigs, a pine cone, etc. The first group to return wins.

2. Let children play "Drop the Handkerchief" using a pine cone.

3. Have a relay, using a leaf. Give each team a different kind of leaf. The teams name could be "The Maples", "The Oaks", "The Elms", etc.

4. Collect six flat rocks. Number them on one side only, with a different number from one to six. Divide the children into small groups, each with their own set of rocks. Players take turns throwing all of the rocks. If it lands number up in a designated area, the player gets that number of points. The points are added up and the one with the most wins.

5. Players collect all kinds of stones and pebbles which may be painted or sprayed yellow. The teacher then hides the painted stones around the school grounds. Players must find them and bring them back. The stones are weighed to see who made the biggest gold strike.

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Street Safety	McGraw-Hill

Record:

Health and Safety Through Music

Unit I - Seasons

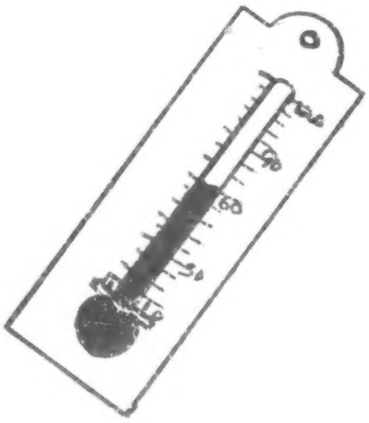
Concept A SEASONS BRING CHANGES IN TEMPERATURE

Outdoor Activity:

1. Set up a thermometer outdoors. Have children make readings at different seasons for several days. Discuss why clothes we wear outside in the spring, winter and fall will vary.

Related Activities:

1. Develop the understanding of what is considered high, average, and low temperature by reading the thermometer during the year.
2. Use model in library and transparencies to develop an understanding of why there are temperature changes each season.
3. Have children develop an understanding of graphs in plotting temperature.



Concept B SEASONS BRING CHANGES IN PLANTS

Outdoor Activities:

1. Have children select an area on the school yard and observe plants growing tn the Fall. Watch the change of this area as Winter sets in and then as Spring begins. Do this as an over-all observation and also block off areas and assign children to each for closer observation.

2. Have children observe a tree the entire school year.

    a. Notice that buds are formed before leaves fall so it is ready to begin growth in the Spring.

    b. Mark a terminal and lateral bud with twisters.

    c. Observe buds in winter.

    d. Observe buds more frequently in the Spring. Notice terminal buds open to add length to twigs. Lateral buds open to make a new twig.

    e. Notice that some buds on a maple tree are neither lateral nor terminal. (Larger or different in position). Discoverwhat they are through several visits (flower bud).

    f. Observe catkins on oak, hickory, and willow trees. Also observe other flowers. Notice as seeds develop and discover how seeds might be scattered. Develop understanding of the plant cycle.

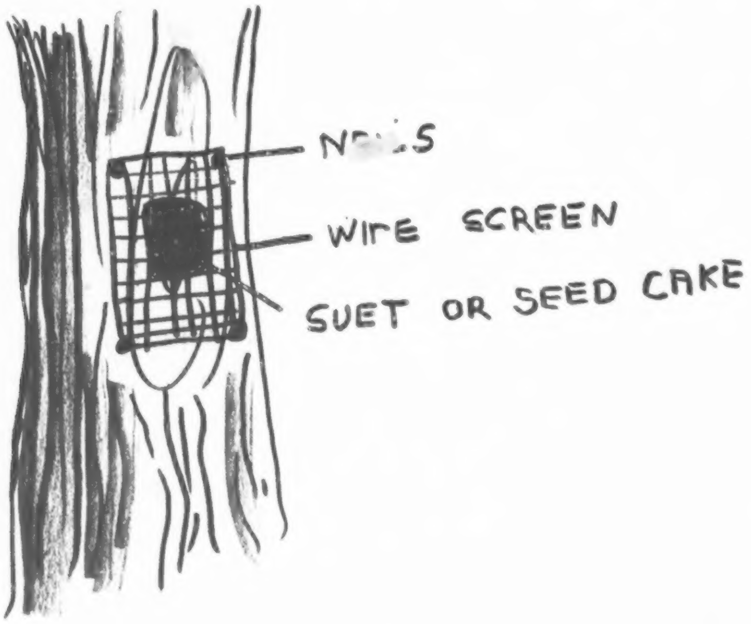
3. Have children take a nature walk in the Spring and Fall. List flowers you see, according to color. What color predominates in each season?

4. Have children keep an observation record of changes you see in each season. Record date and place. Compare changes seen in each season. At any time bring in rocks, sticks, feathers, seeds, etc. and glue together to make "crazy creatures." In the Fall collect seeds to make seed pictures.

Concept C SEASONS BRING CHANGES IN ANIMALS

Outdoor Activities:

1. Have children observe changes in animals' coats.
2. Have children find a hibernating animal's den. Discuss his preparation for hibneration. (He eats an excess amount to store fat for his long winter sleep. The animal's body functions become slower).
3. Observe birds that are here at different times of the year.
    a. Build a bird feeding station.
    b. Keep record of birds that come to feed.
    c. Observe when certain birds disappear and when certain ones are seen for the first time.



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Spring and Summer	Eye Gate
Autumn and Winter	Eye Gate
What is a Season	Eye Gate
The Four Seasons	Eye Gate
Birds and Their Songs (Smaller Birds of Woods and Gardens - With Record).	

Transparencies:

Weather No. 45

45 S - We Dress for the Weather.
45 T - We Prepare for Weather in other Ways.
45 O - Animals Prepare for Weather
45 U & 45 W - Weather Changes with the Season.

Records:

Paul Krause, - All About the Seasons
Arnold and Doane, - All About Spring

Birds and Their Songs Part II (Smaller birds of Woods and Gardens).

Unit II - Plants

Concept A PLANTS DIFFER IN MANY WAYS

Outdoor Activities:

1. Go outside to see a variety of plants. Let the children discover the many differences in plants - large, small, with leaves, broad leafed, and narrow leafed plants.

2. Have children collect as many different plants as possible. Press plants and put under clear plastic. Display on bulletin board.

3. Discuss different kinds of places where plants grow, such as shady, dry, cold and hot. Find pictures to show these places. Take a walk and have children observe different places in which plants grow.

4. Walk around the school yard. Help children discover plants that grow on other plants, such as mistletoe and love-vine (dodder).

5. Have children collect seeds, plants, fruits, and flowers. Compare. Display on bulletin board.

6. Take a walk. Have children collect some green plants and some non-green plants, such as the mushroom. (careful!) Show that all plants are not green. (Display).

7. Take a walk. Have the children identify the roots, leaves, stems and when possible, the flower and/or fruit.

Related Activities:

1. Put a piece of bread in a jar. Wet the bread, seal the jar and watch for mold.

2. To help children discover what the roots of the plant are used for, take a plant out of a container and cut off the roots. Replace the plant. Observe for a few days.

3. Have each child make a flower pot from clay. When the pots are completed, have the children fill with soil and plant flower seeds. This can be taken home as a gift to Mother. (See Art, Concept A, Related Activity No. 1).

Concept B

PLANTS NEED SUN, WATER, AND GOOD SOIL TO LIVE AND GROW

Outdoor Activities:

1. Plant seeds in three containers. Place one in the sunlight with no water, one with water and no sunlight, and one container with both water and sunlight. Observe results for several days.

2. Cover grass area outside the classroom with a small board. Leave for two weeks and have children observe grass area that has had sunlight and the area under the board that has not had sunlight. Discuss reasons for observed differences.

3. Plant bulbs in the Fall for Spring blooming.

4. Plant a geranium in soil and watch it grow.

5. Take a trip to a greenhouse and nursery. Have children find out why we have greenhouses and plant nurseries and what the plants are used for.

6. Take a field trip to a nearby woods. Have children collect ferns, moss, and other small wood plants for a terrarium.

Related Activities.

1. Each class will make a terrarium, (desert, woodland or marsh).
    a. Desert terrarium (see Baker Nature Study Pack, September No. 6).
    b. Marsh terrarium (see Baker Nature Study Pack - September No. 5).
    c. Woodland terrarium (see Baker Nature Study Pack - September No. 4).

2. Start a new plant in water from a cutting of wandering jew. Observe roots.

3. Soak seeds in a jar until outer covering is soft. Let each child open a seed to find the embryo plant inside.

4. Place a sponge in a shallow dish of water. Sprinkle bird seed on the sponge. Keep plenty of water in the dish. Watch the different plants appear.

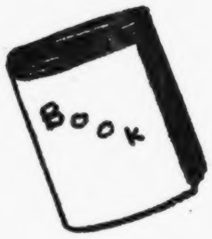
Concept C PLANTS ARE USED IN MANY DIFFERENT WAYS

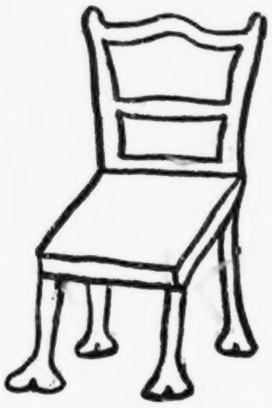
Outdoor Activities:

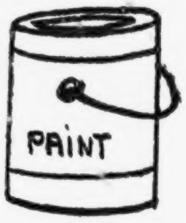
1. Take a trip to find plants that supply food, clothing, shelter, and fuel. Have children bring in and display as many of these plants or products as possible.
2. Make charcoal by charring a hard wood. (Save this to be used in terrarium).

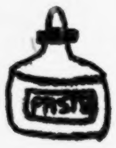
Related Activities:

1. Discuss with the children the idea of drugs coming from plants.
2. Plants have beautiful blossoms. Keep seasonal blossoms in the room at all times.









Concept D

TREES HAVE MANY IMPORTANT PARTS AND DIFFER IN MANY WAYS

Outdoor Activities:

1. Have children collect leaves. Let them compare both their size and shape. Have children observe that some are simple, some compound, some have toothed edges, some have smooth edges, some are lobed and some are not lobed.

2. Make leaf spatter prints (See Arts & Crafts, Concept A, Outdoor Activity 5-a).

3. In the fall have children or class adopt a tree. Watch all the changes that take place until late the next spring. (See Science, Unit I, Concept B, Outdoor Activity No. 3).

4. Take the students outside to examine some trees. Ask them what is similar about the tall trees they see. (They should see that they have strong trunks which have bark to protect the plant. They have branches, twigs, and leaves).

5. Have children look at the overall shape of the tree. Have them draw simple shapes.

6. Have children begin to learn to identify tree families. Make a clue chart.

Shape	Leaves	Bark	Branching	Fruit	Flower	Name

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Story of Fruits and Vegetables	Society for Visual Education
Plants, how they live and grow	" " " "
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Plants are Living Things	" "
Work of Flowers	" "
Seeds and How They Travel	" "
How Plants Start Growing	" "
How Plants Help Us	" "

Filmstrips:

Plants	Eye Gate
Plants and Seeds	Eye Gate
Spring and Summer	Eye Gate
Autumn and Winter	Eye Gate
Plants Grow and Change	Eye Gate
Trees: Man's Best Known Plants	Eye Gate
The Story of Seeds	Eye Gate
Wild Flowers	Eye Gate
Seeds and Seed Travels	Society for Visual Education

Transparencies:

Plant Structure Part I:
- 49 H - Parts of a Plant
- 49 V - Branching Pattern

Plant Structure Part II:
- 50 E - Leaf Arrangement
- 50 F - Leaf Margin
- 50 G - Compound Leaves
- 50 J - Types of Leaves
- 50 S - Why a Plant Developes

Identification of Hardwood Trees:
- 23 C - Walnut
- 23 G - Oak
- 23 K - Tulip Tree
- 23 L - Sweetgum
- 23 N - Cherry
- 23 O - Locust
- 23 W - Catalpa
- 23 U - Dogwood

Our Plant Resources:
- 4 A - Source of Food
- 4 B - Basic of Life on Earth
- 4 D - (Leave off oxygen, moisture, carbon dioxide) Essentials of Plant Growth
- 4 G - Plants Help Make Soil
- 4 O - Man uses Plants for Food Production
- 4 Q - Man used Plants for Clothing and Shelter
- 4 R - Man used Plants for Enjoyment

Record:

Dance - A - Story - About the Toy Tree - Barlin

Film Loops - St. Bethlehem School:

Seed Dispersal	Walt Disney
Self Planting Seeds	Walt Disney
Seed Sprouting	Walt Disney
Carnivorous Plants	Walt Disney
Growth and Pollination of Corn	Walt Disney
Fruit Ripening	Walt Disney
Climbing Vines	Walt Disney
Flowers Opening	Walt Disney

Unit III - Soil

Concept A SOIL IS MADE UP OF MANY DIFFERENT THINGS

Outdoor Activities:

1. Take a field trip to a local quarry, building exacavation, or fresh road cut. Observe various layers of soil.

2. Have children take a walk and collect soil samples from different areas on the school grounds or neighborhood. Have them record the places they collected the samples. Observe what soil is made from (dead plants, dead animals and rock particles.)

3. Distribute magnifying glasses and have the children examine the soil. List the objects the children see in the soil. Then discuss what objects are commonly found in most soil.

4. To show how the rocks can be separated from the soil, have one child pour his sample of soil into a strainer. Have him hold this over a large pail. Have another child pour some water into the strainers several times. Discuss what went through the strainer and what is left.

5. Fill a jar half full of soil. Add water to the jar above the level of the soil. Have the children observe the top of the water for a minute or two. What happens? Why? (They will see bubbles rise to the surface. This will show there is air in the soil).

6. When soil samples are dry, try burning small amount of each to obtain different odors.

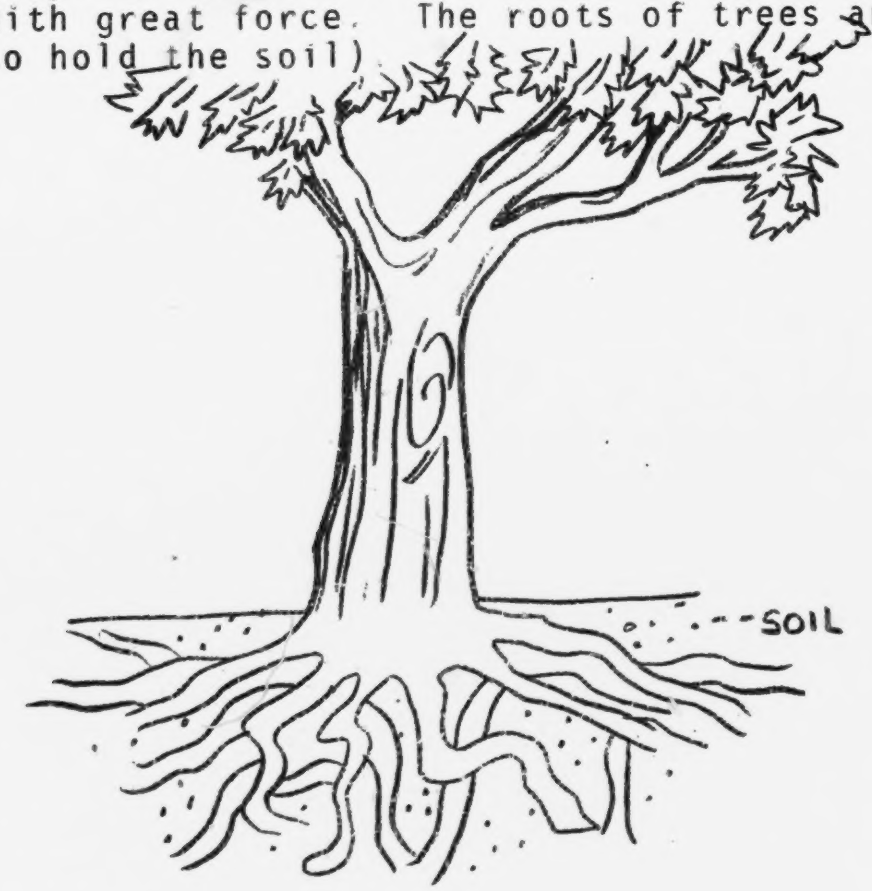
7. To show how water helps move soil down into the ground from the surface, fill a flower pot with rich dry soil. Set the pot under a dripping faucet. Let the water drip for an hour or more. Examine the surface of the soil. (The finer clay and inorganic matter removed from the surface by the falling drops).

8. Take children on a field trip to a nearby farm. Have the farmer point out the importance of good soil. They can see the large amount of fertilizer he uses.

9. Let children help in school garden by preparing soil, planting seeds, and applying fertilizer. (Fertilizer is needed by plants as vitamins are needed by people).

10. Take a walk. Find an example of erosion. Ask children, "What happened to the soil?". Why? (Soil is carried by the wind and water from place to place). Experiment - Put different types of soil in like containers. Pour equal amounts of water over each. Observe different speeds that water passes through the soil.

11. Take a field trip. Help the children discover the ways trees help in keeping the soil rich and in place. (The trees act as a windbreak to reduce the force of the wind and keep it from blowing the soil. Trees also break up rain drops as they fall so that they do not strike the soil with great force. The roots of trees and plants help to hold the soil)



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Filmstrip - Clarksville-Montgomery County Library:

Science in Everyday Life - Soil and Its Use

Transparencies:

Our Soil Resource:

2 C - Erosion is Ugly
2 G - Soils Differ
2 F - Typical soil Profile
2 E - How Soils are Formed
2 D - How Soils are Formed
2 C - (Leave off last example chemical action)

Unit IV - Forces

Concept A

GRAVITY IS A FORCE WHICH PULLS OBJECTS TOWARD THE CENTER OF EARTH

Outdoor Activities:

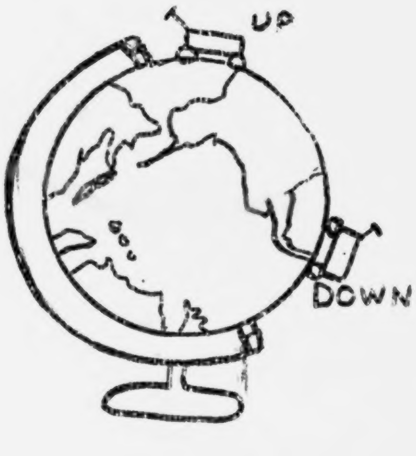
1. Have a child toss a ball into the air and let it fall. Observe that the ball always falls, whether it is thrown hard or lightly.

2. Have children toss up objects of different weights such as bits of paper, feathers, cork, small pebbles or other light material available. Talk about the way each kind of material falls. Observe if they fall at the same rate of speed.

3. Tie a cord to one end of a small object. Hold on to the cord and drop the object. Observe if it falls toward the center of the earth (down) until stopped by the cord.

Related Activity:

1. Use the globe and explain that the globe is a model of the world. Use toys that will adhere to the globe. Place them on the globe to demonstrate that "down" is toward the center and up is away from the center of the earth.



Concept B

FRICTION IS A FORCE THAT HELPS THINGS TO STOP MOVING AND, IN THE PROCESS, GENERATES HEAT

Outdoor Activities:

1. Have children look for examples of friction on the playground, slides, swings, etc.

2. Have children roll toy cars on a smooth surface (black top) and then on a grassy area. Notice the difference in the speed and distance.

3. Have children observe moving traffic and discuss what causes it to slow or stop. (Also toy wagons, machines, bicycles, etc.)

4. Make sandpaper by spreading glue on strips of paper, sprinkling sand on the paper, letting it dry. Prepare small blocks of wood and put sandpaper on the end of each block. Prepare enough blocks for all the children to have two blocks. Have children rub the blocks together and discover what happens. (The heat produced).

Related Activity:

1. Let children rub their hands together and discover how warm they become. Wet them and rub them together again. Is there more or less heat? Wet hands again and put soap on them. Do they get as warm?

Concept C

INERTIA MAKES THINGS AT REST REMAIN AT REST, AND MAKES THINGS IN MOTION MOVE UNIFORMLY IN A STRAIGHT LINE UNLESS AN OUTSIDE FORCE ACTS ON THEM.

Outdoor Activities:

1. Have children observe objects that are moving. Decide what force caused the different objects to move or to be put in motion. If the object stops, discuss what caused it to stop.

2. To help the children understand that things tend to keep doing what they are already doing. Use a toy wagon or any toy on wheels, toys without wheels, (as a small wooden box about the same size of the toy wagon or a cardboard box about the same size), marble, small ball, an apple or orange, table top or other smooth surfaced piece of furniture, and a small board wide enough to hold the toys.

   Have the children place the objects one at a time, on the flat smooth surface. As the children take turns placing the objects, have them observe closely to see if the articles stay where they are placed. If they move, what force causes the move? If they are once at rest and no force is exerted on them, will they stay at rest?

   Now take the things that will roll - wheeled toys, marble, round fruit and set each one in motion on the flat surface. Observe when it is moving - does it tend to keep moving? Attempt to set in motion the objects that do not roll by giving each one a push. Observe what happens. (Blacktop surface).

3. Have a child put a doll in a toy car. Roll it across the blacktop. Have the car stop suddenly by hitting an object. Have them observe what happens to the doll. Discuss reason.

4. Have a child roll a ball on the sidewalk or blacktop. Mark the distance covered. Roll the ball again on a grassy surface and measure the distance covered. Note the difference in the distance that the ball rolled. Discuss what might have caused the difference in the distance covered.

Related Activity:

1. Have the children make statements about what they discovered when they used the above objects. Record the statements on their experience charts. Have the children copy the statement and read them, (See Language Arts, Concept A, Outdoor Activity 5).

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Magnets - Science at Work

Transparency:

34 C - Identification of Poles

Unit V - Moon

Concept A

AS THE MOON MOVES AROUND THE EARTH ITS SHAPE AND POSITION APPEAR TO CHANGE AND SURFACE FEATURES CAN BE SEEN.

Outdoor Activities:

1. Observe the moon after the last quarter when it can be seen in the morning. (While observing the moon be careful that none of the children turn binoculars toward the sun. Serious permanent damage to the retina of the eye can result).

2. Have children make craters:

   a. You need a sand pile full of loose sand.

   b. Stand on a ladder above the sand pile.

   c. Throw a ball into the sand as hard as you can. This forms a "crater".

   d. Try making small craters inside the large crater by throwing marbles into it.

   Have several children do the above. Notice how each hole is different in depth and size.

3. Have a child throw a small rock into moist sand or mud. (The rock will disappear under the "crater" while leaving the hole it made behind).

4. Show how the moon moves around the earth and receives its light from the sun. (See Science, Unit VI, Concept A, Outdoor Activity No. 6).

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Our Silvery Moon

Unit VI - Earth and Sun

Concept A

THE EARTH REVOLVES AROUND THE SUN WHICH IS OUR SOURCE OF HEAT & LIGHT

Outdoor Activities:

1. Have the children go out to the school yard and observe differences in the temperature in the shade and in the sun. Discuss the reason for the difference and the source of heat.

2. Have children set up thermometers in different locations on the school ground. Take readings at different times of the day for several days and record each reading on a graph that will show the day, time of the day, and location of thermometer. Compare graphs and discover what caused the differences in the daily readings and the differences through the week.

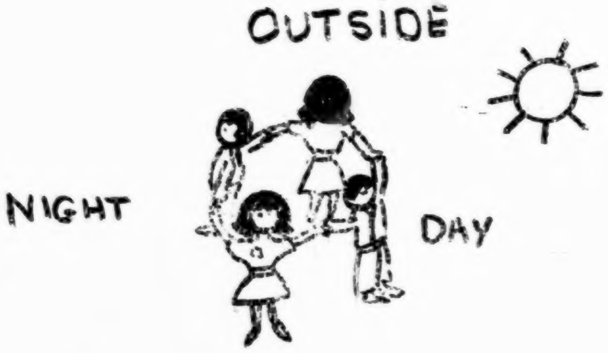
3. Place thermometers under different colored pieces of paper. Have children record readings on a graph for several days. Discuss why temperatures varied side by side under different colors. Discuss why there was a greater difference on a clear day than on a cloudy day.

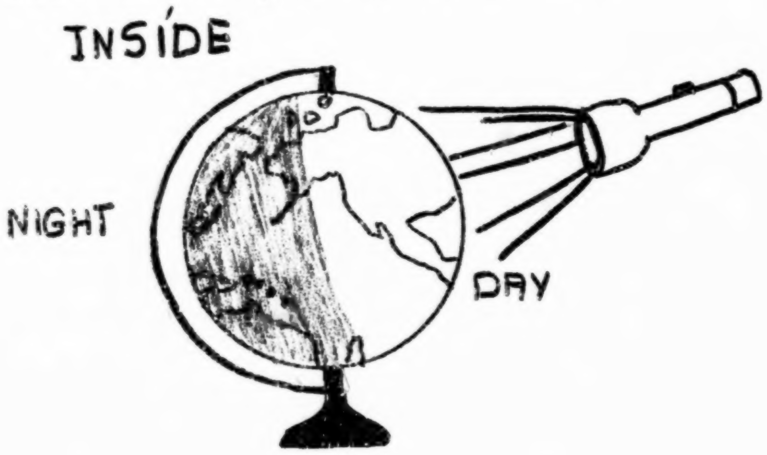
4. Have children stand in the sun and feel the temperature of light and dark clothes. Discuss why some feel warmer than others. Do the same in the shade. Discuss why there isn't as much difference in the shade.

5. Have children go out to the school yard and discuss brightness in the sun compared to the shade. Discover the source of light.

6. Have children measure the length of the shadow of the flagpole, other poles, or child's shadow at different times of the day. Discover why this length changes.

6. Have four children make a circle facing out. Early morning or late afternoon will get best results. The child facing the sun receives more light on his face than the child on the other side of the circle. Now have the children pretend they are the earth turning on its axis. As they turn, each one will face the sun and be in brighter light at times. If your four children were the world turning, no light could filter through to the dark side, therefore that side of the earth in the shadow would be dark. Continue to discuss day and night with the children. Then go back into the classroom with the globe and flashlight to reinforce this idea.





Related Activities:

1. Use transparencies that show causes of day and night.

2. Use model of the earth in the library to show the movement of the earth in relation to the sun. Explain how this causes day and night.

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Our Earth	Encyclopedia Britannica
The Sun	Encyclopedia Britannica
What Is The Earth	Benefic Press

Records:

The Universe Around Us

Transparencies:

Water, Air and Heat (Science 5)
  5 W - What Causes Day and Night
  5 X - The Earth and Sun

The Earth (Science 25)
  25 B through 25 O (check all)

Unit VII - Weather

Concept A

WEATHER CHANGES AS THE CONDITION OF THE AIR CHANGES

Outdoor Activities:

1. Blow up a balloon in a warm room. Have children take it out into the cold. Notice change and discuss reasons for change. (See page 29-33 in Everyday Weather and How It Works, by Schneider, for a good illustrated explanation).

2. Have children go out on playground and observe effects of the wind (trees blowing, dress moving, grass moving, etc).

Related Activity:

1. Take a bottle about six or eight inches tall. Put colored water in the bottle. Close the bottle with a stopper that has a glass tube through it. Be sure the glass tube is well under the water. Put the bottle in the hot sun or on the radiator. What happens? Why? Put the bottle in a cool place. What happens? Why?

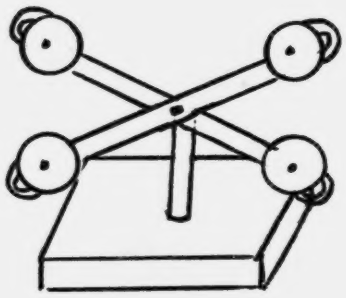
Concept B WIND IS CAUSED BY SEVERAL FACTORS

Outdoor Activities:

1. Compare speed of wind on different days or at different times of the day.
2. Use an anemometer to compare the speed of wind.

Related Activities:

1. Make an anemometer. Staple handles of paper cups to a circle of cardboard (paper plate or tag board). Set the plate on a stick with a pin in the end of it so that it will turn freely.



2. Put a small cotton rope, smoldering at one end, in a jar. When the jar is filled with smoke, remove the rope and put a sheet of paper over the mouth of the jar to hold in the smoke. Heat the jar. Bring another jar in from outside or from the refrigerator. Put jars mouth to mouth, the hot jar of smoke on the bottom. Remove the paper. What happens? Why? (Reinforce with Transparency No 5 - Water, Air & Heat J & K).

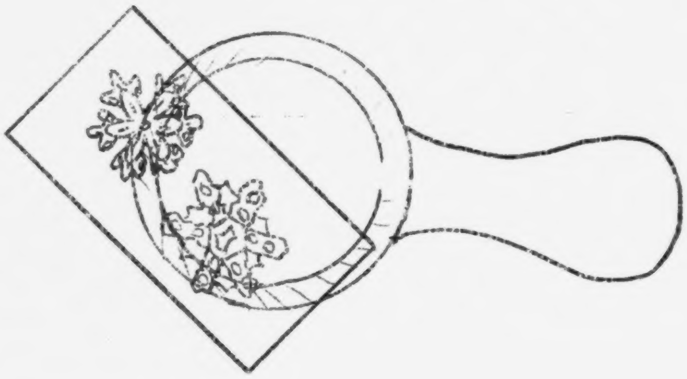
Concept C RAIN IS CAUSED BY SEVERAL FACTORS

Outdoor Activities:

1. Have the children put the same amount of water in two identical shallow pans. Put one pan in the shade and one in the sun. Several hours later measure water carefully. Did the same amount of evaporation take place? Discuss other places on earth where evaporation takes place. (Ponds, lakes, rivers, oceans, seas, trees, etc.) If it's a cold day make a small cloud by blowing your breath. Lead children to conclude that this moisture makes clouds.

2. When it hails, go out and collect some and examine carefully. Slice a hail stone open to see if you can see the layers formed as the cloud moved up and down in the atmosphere. Have children read Rain and Hail, by Branley, for a better understanding.

3. When it snows, collect flakes on dark paper and look at them with a magnifying glass. Let the snow melt. Let children discover how much water there is. Have children read about snow in What Happens in the Sky, by Bethers. Let children figure out why there is not the same amount of water as snow.



Related Activities:

1. Have children cut snow flake designs from folded tissue paper and mount on large pieces of paper or make a mobile.

2. Heat a kettle of water and see steam come from the spout. This is like a small cloud. Let the steam come in contact with a piece of glass at room temperature. What happens? Why? (See transparency 27-H in Earth, Science, - Weather).

3. Make individual calendars for each child. Divide each day into two parts. Draw a symbol to illustrate the weather forecast in paper that night. In the other part of the square draw a symbol to illustrate the actual weather.

Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Forecast Actual						

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Air, Wind and Weather	Eye Gate
All Weather	Eye Gate
Weather Changes	Eye Gate
Our Weather	Encyclopedia Britannica
Finding Out About Clouds	Society for Visual Education

Transparencies:

No.27 - Earth, Science - Weather

- 27 H - Evaporation and Condensation
- 27 L - Types of precipitation

No.45 - Weather

- 45 E - The Sun Influences the Temperature of the Atmosphere
- 45 H - Evaporation
- 45 I - Condensation
- 45 N - Moving Air is Called Wind

No. 5 Water, Air and Heat

- 5 J - Does air go up or down?
- 5 K - What warms the air outside
- 5 L - What makes a Cloud?
- 5 M - Can you Make a Cloud?
- 5 N - What Makes Rain?
- 5 O - Can you make Rain?
- 5 P - What makes Snowflakes?
- 5 Q - Does water go up or Down?

Records:

The Universe Around Us

Unit I - Community Helpers

Concept A — MANY PEOPLE SERVE OUR COMMUNITY

Outdoor Activity:

1. Take a walk around the school yard and observe as many helpers as possible.

Related Activities:

1. Take a field trip to the local sheriff's office, post office and fire station. Make a classroom movie about the helpers.
2. Visit a local grocery store.

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The Doctor	McGraw-Hill
The Grocer	McGraw-Hill
The Policeman	McGraw-Hill
The Fireman	McGraw-Hill
The Mailman	McGraw-Hill

Unit II - Transportation

Concept A

MANY KINDS OF TRANSPORTATION ARE NEEDED TO DO THE WORLD'S WORK

Outdoor Activities:

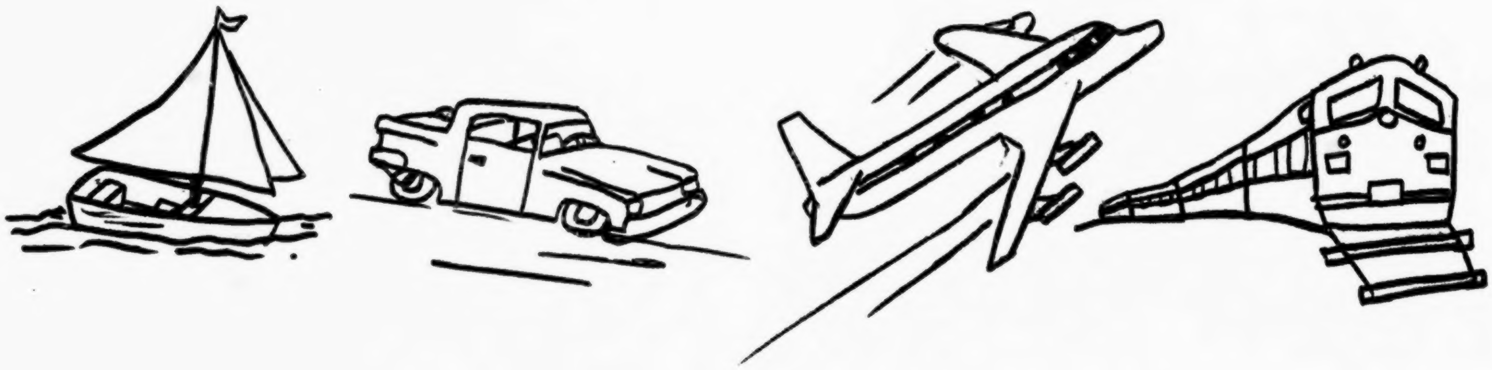
1. Have children make a tally of different types of vehicles on the roads on both sides of our school.

2. Take a field trip to an airport, a bus station, a train station, a boat dock on the river, and a truck transfer company. Discuss the importance of each type and why we need each type.

3. Take a trip to the farm to see what type of transportation is being used.

Related Activity:

1. Make a mural to show the types of transportation on the two roads. Write a number on each vehicle to show how many were seen. Also, include any air transportation that was seen.



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Filmstrip - St. Bethlehem School:

Transportation	Society for Visual Education

Records:

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Stories and Songs About the Sea
Stories and Songs About the Wild West
The Mighty River
Stories from the Bible (Noah and The Ark)
America on the Move
Rudolph, the Red-Nosed Reindeer
Dance a Story About Noah's Ark

Unit III - Food

Concept A

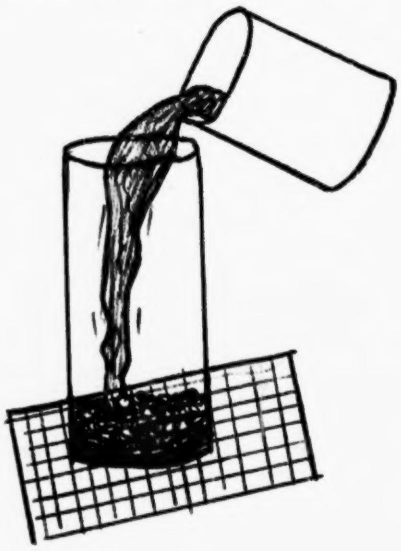
FOOD AND WATER ARE ESSENTIAL TO GOOD HEALTH AND GROWTH

Outdoor Activities:

1. Visit a garden and observe the different kinds of food growing.
2. Have children observe fruit trees developing fruit.
3. Have children make a small scale water filter. Observe sediment from the water. (Experiment - take a plastic cylinder, put a fine screen over the bottom. Place layers of sand, charcoal and gravel in the cylinder. Pour in muddy water. Observe results).
4. Visit a cattle pasture and a cattle feeder lot. (Follow up with number 3 under related activities).

Related Activities:

1. Visit the cheese plant.
2. Visit a local grocery store.
3. Visit a meat packing plant.
4. Visit a water purification plant.



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The Story of Bread	Society for Visual Education
The Story of Fruits and Vegetables	Society for Visual Education
The Story of Meat	Society for Visual Education

Unit IV - Clothing

Concept A CLOTHING COMES FROM SEVERAL SOURCES

Outdoor Activities:

1. Visit a farm at sheep shearing time.
2. Plant cotton.

Related Activities:

1. Visit a shoe factory.
2. Weave cloth.
3. Visit clothing manufacturing factory.
4. Make charts from samples of raw and finished materials.
5. Have children observe animal hides while visiting a meat packing plant.

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Unit V - Homes

Concept A — THERE ARE MANY DIFFERENT TYPES OF HOMES

Outdoor Activity:

1. Visit the community to observe as many different types of homes as possible.

Related Activity:

1. Have children make a model community to show different types of homes.

Concept B — THERE ARE MANY KINDS OF MATERIALS USED IN CONSTRUCTING HOMES

Outdoor Activity:

1. Visit the community to observe many different kinds of materials used in constructing homes.

Related Activities:

1. Visit a lumber company to observe building materials.

2. Display samples of building materials.

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Books:

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Concept A

OUTDOOR ACTIVITIES CAN HELP ONE LEARN TO EXPRESS HIMSELF ORALLY AND IN WRITING

Outdoor Activities:

1. Go out on the school ground. Sit quietly and listen. Write about sounds you hear. (Poems, riddles, stories, sentences, etc.)

2. Go out on the school ground and play the game, "My Grandmother went on a trip and she took with her ________". The things that she took with her are things that can be seen from the school yard. A child will not be out of the game if he missed his turn. Have him stand for one mistake, one hand on hip for two mistakes, etc. (This game teaches A, B, C, order).

Related Activities:

1. Have children make experience charts connected with other outdoor activities.

2. Have children write up plans for each trip. Each child will make a list of things to be observed.

3. Have some oral reports made by children after various trips.

4. Use clue charts to identify trees. (See Science, Unit II, Concept D - Activity 5).

5. Have children write thank you notes to places that you visited.

6. Have children write descriptive paragraphs of things seen on a field trip.

Concept A MATHEMATICS IS RELATED TO EVERYDAY LIVING

Outdoor Activities:

1. Have children measure various things and distances.

2. Compare temperatures. (See Science Unit VII, Concept A Activities Nos. 1, 2, 3, & 4) Learn to count by 2's.

3. Discover the growth rate of plants.

4. Go out on the playground. Develop the concept of a line segment by naming points and line segments.

5. Develop the difference in a line segment and ray. (A line segment is from telephone pole to telephone pole; a ray can go on indefinitely).

6. Develop the concept of a circle by using a large circle of children. Place a child in the circle to show a point inside the circle and a child outside the circle to show points outside a circle. (Do the same with squares and triangles).

7. Demonstrate the different angles by using a square on the tennis court, corners of buildings, etc. Find right angles.

8. Go for a walk around the school ground. Record the time you left and returned. Figure out how long it took.

Related Activity:

1. Develop the idea of drawing a simple figure by using line segments to make a closed figure. (Triangle, square, rectangle).

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Books:

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Concept A

OUR ENVIRONMENT HAS MANY FORMS OF DESIGN AND NATURAL MATERIALS THAT CAN BE USED IN ARTS AND CRAFTS.

Outdoor Activities:

1. Take a field trip to look for interesting subjects for pictures.

2. Have children find designs in the out-of-doors.

    a. Circle - sun, moon
    b. Straight - blade of grass, tree trunk
    c. Zigzag - edge of leaves, trees
    d. Wavy - soil, stream

3. Take a walk and observe as many different colors in nature as possible. Different seasons of the year have different colors.

4. Go outside with drawing boards. (Pieces of cardboard may be used with clothes pins to hold drawing paper). Have the children draw the shapes of trees. (This will help them to understand that all trees are not like "balls on sticks.")

5. Go outside to gather leaves for leaf prints.

6. Have children gather seeds, leaves, pods, weeds, stone and etc. These can be used to make pictures, crazy animals, etc. (These can be collected and stored in covered boxes or jars. Good conservation practices should be used).

7. Go outside to gather small nature objects for shadow boxes. Paint the outside of a box a color that will harmonize with the room it is to be used in. Paint the inside blue (for sky). Draw a design first on paper Plan the scene to suit minature nature objects that have been collected. Glue each object to the floor or back of the box.

Related Activities:

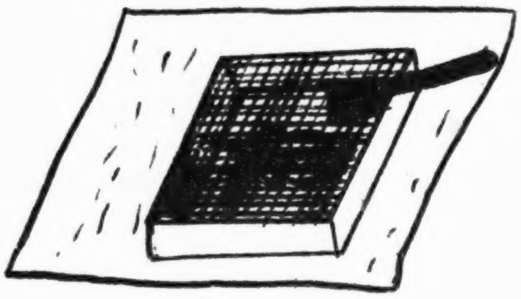
1. Have children make flower pots from clay - take a ball of clay, press thumb in the center and turn until the hole is desired size. Finish sides and edges, let dry. Have fired in kiln. Paint and let dry again. Spray with clear plastic coating. Fill with soil, plant seed.

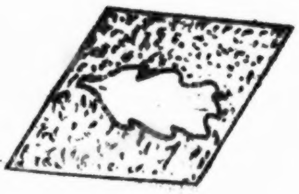
2. Have children make block prints with a potato. The stamp block (potato) is carved with a knife or chisel. If the design is raised these should be 1/16" or more clearance between the surface of the design and the block. This is also true if the design is carved into the block. To ink the stamp, a regular stamping pad may be used. Make test prints on sample swatches. Stamp the material by pressing the stamps against the pad and then on the fabric or paper.

3. Have the children make animals out of clay.

4. Spatter prints - cover work area with newspaper. Lay the paper to be spattered on the top of the newspaper. (Leaf print will be more successful if the leaf has been pressed overnight). Have poster paint prepared to the consistance of thin cream. Put your leaf on the paper, over this place a frame covered with screen wire. Dip an old toothbrush over the screen wire frame. (Do not press too hard). The paint will spatter all around the leaf. Remove the leaf very carefully and let dry. Mount and display.

5. Ozalid paper - Place a piece of ozalid paper on a clip board or any firm object. Place leaf on yellow side of ozalid paper and cover with a piece of glass. (Be sure you do not have hands on glass). Place in sun and count 10. Remove glass and put paper in a jar that has a baby food jar full of ammonia in the bottom. Seal the jar and watch. When it is a purple-blue, remove.





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Filmstrip - St. Bethlehem School:

Fun With Clay

Concept A

MUSIC IN THE OUT-OF-DOORS WILL DEVELOP A FEELING FOR AN UNDERSTANDING OF RHYTHM

Outdoor Activity:

1. Go outside and listen to the sounds of the birds, and other sounds of nature.

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Filmstrips - St. Bethlehem School:

Sounds Around Us	Eye Gate
Birds and Their Songs (With Record)	Museum Ext. Service

Records:

The Songs of Insects
Songs of the Forest
Birds on a May Morning
Spring Morning

Concept A

PHYSICAL EDUCATION PROVIDES WHOLESOME MENTAL ATTITUDES, HEALTHFUL HABITS AND MEANINGFUL USE OF LEISURE TIME.

Outdoor Activities:

1. Tree tag: One or more persons are "it". Players are safe only when they are touching a tree of a particular kind designated. Change the kind of tree from time to time. (This game should be played after children learn tree families).

2. Observation: Each child is given a list of things to look for on a hike, perhaps with questions. They should check items that were seen and discuss them when they return.

3. Rainbow Hunt: Give each child a list of colors. Have the child check off each color he sees while on his hike. Compare them afterwards and see how many different colors were seen.

4. Let-Them-Alone Hunt: The youngsters divide into small groups and each group gets a list of objects common to the area that might be seen on the hunt. The list could include such items as:

   A tree that has been struck by lightening
   moss
   fern
   mushroom
   black ants
   humming bird
   dogwood flower
   sumac tree
   leaf shaped like a mitten hawk
   a red flower
   animal track
   bird's nest
   squirrel's home
   red ants
   poison ivy
   dogwood leaf

   The hunters go together as a group. As soon as a player spots one of the objects on the list, he shouts it out and his group gets credit. Each object counts one point.

   Variation: - Use leaves as list of objects.

5. **Natural Alphabet** - Divide the players into teams if the group is large. If only a few play, each can play as an individual. Give each child a paper or plastic bag, and a sheet of paper containing the letters of the alphabet. The teams go out to find some object starting with one of the letters of the alphabet (such as "A" acorn, "B" briar, etc.), within a given time limit. The person or team wins who has the most letters of the alphabet accounted for.

6. **Dog Catcher:** - Name three or four kinds of dogs. Each child chooses what kind of dog he wants to be. All go to one kennel. Dog catcher calls one kind of a dog. They run to the opposite kennel. If caught, they are put in the pound. After the dog catcher has had three turns, he tells how many dogs he has caught. Then he chooses another to take his place until all are caught. The last one caught starts the new game.

7. **Nature Bingo:** - Make up bingo cards using flowers, birds, or leaves. Have the children go for a nature walk and cross out each one they find. When you complete a line in any direction, you yell, "Bingo".

Related Activities:

1. Bird description: Put pictures of birds on each person's back without telling him what bird it is. Each person asks questions of others trying to identify the bird on his back.

   Variation: Use fish, animals or other nature category.

2. What am I? A player leaves the room and the group decides what animal or other nature object he shall represent. The player returns and tries to discover what he represents by asking questions on characteristics that may be answered "yes" or "no". When he identifies himself, the person whose answer helped him make the discovery leaves the room next.

   Variations: The player writes on a slip of paper what he represents. The rest of the group may then ask him questions which can be answered "yes" or "no" until they find out what the object is.

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Unit I - Sound

Concept A

SOUNDS ARE CAUSED BY SOMETHING THAT MOVES OR VIBRATES

Outdoor Activities:

1. Have children sit quietly among the trees or bushes. Listen to the sounds of nature. Discover what is causing the sounds and record them on a chart.
2. Take children outside. Have someone put his ear to the ground while someone else, farther away, stomps the ground. Discuss why the child listening to the noise can hear it. (Sound is vibrating through the ground).
3. Take class on a hike in the woods. Listen to the sounds. Record the sounds as to high or low. (Chart) Decide which sounds are easiest to hear.
4. Shake a branch in the air to show how the vibration of the stick causes a swishing sound.
5. Have children listen to a bird singing, and try to imitate its song by whistling or humming.

Related Activities:

1. Drop a heavy object into a pan of water. Let children observe the tiny waves made by the object. Point out that sound vibrations travel through water.
2. Connect two cans with 10 feet of heavy string. Allow the children to communicate with each other on this device. Discuss why it is possible to hear sound in the can.
3. Tie a spoon in the center of a 5 foot string. Have children wrap the ends of the string around their fore-fingers and place fore-fingers in their ears. Tap spoon on something. Discuss results.
4. Discuss how sounds are carried over wave lengths in T.V., telephone, walkie-talkie, and radio. (Lang.)

Concept B SOUND WAVES CAN BE DIRECTED

Outdoor Activity:

1. Have a child speak through a megaphone (outside where no one will be disturbed), and then speak without the megaphone. The rest of the class should listen for the change in the sound. Have children stand on the side and also in front of the megaphone. (The megaphone is directing the sound waves straight ahead).

Related Activity:

1. Make a megaphone in class by stapling, or gluing, a large piece of construction paper in the form of a cone.

Concept C SOUNDS CAN BE MADE HIGHER AND LOWER DEPENDING ON THE AMOUNT OF VIBRATION

Outdoor Activities:

1. Have children blow lightly on a leaf edge or blade of grass. Listen for the sound. Repeat this, but blow harder. The more air you blow, the more the leaf vibrates and the louder the noise.

2. Have a child hit a garbage can lightly, and again harder. The more the can vibrates the louder the sound.

Related Activities:

1. Fasten a rubber band securely to something firm. Stretch the band so it is four inches long. Pluck it. Stretch it tighter and do the same. (The tighter the band is stretched, the higher the sound).

2. Lay a piece of wood between two chairs. Attach different size bottles (by string) onto the stick, being careful not to let the bottles hit each other. Tap the bottom of each bottle with a spoon. Listen to the pitch of each bottle. (Short bottles - high notes, long bottles - low notes).

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Unit II - What's In the Sky?

Concept A THERE IS AN OCEAN OF AIR AROUND US

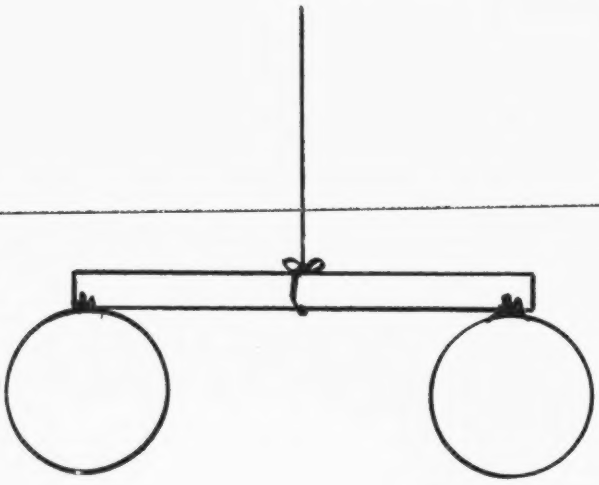
Outdoor Activity:

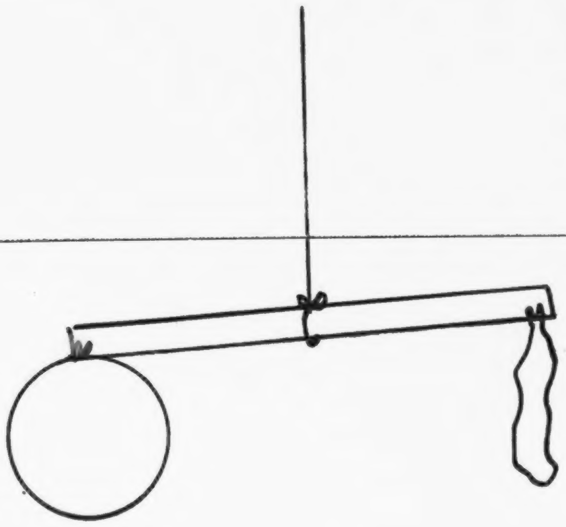
1. Take children for a walk across the school grounds holding a pinwheel, balloon, or kite. What happens to the object being held? Why?

Related Activities:

1. Remove the shell from a hard boiled egg. Set fire to a small piece of paper and drop into a quart milk bottle. The heat inside the bottle reduced the pressure and the air pressure outside the bottle forces the egg into the bottle. (To remove the egg, hold the bottle upside down and blow forcefully into it).

2. Blow two balloons to the same size. Tie a balloon to each end of a yard stick. Suspend the yardstick in the middle so that it will balance. Burst one balloon with a pin. What happens? (They will become unbalanced. Air has weight. The balloon with air weighs more than the balloon without air).





Concept B THE ATMOSPHERE IS MADE UP OF SEVERAL DIFFERENT REGIONS

Outdoor Activity:

1. Take the class outside to observe a cloud, a bird, and an airplane. Discuss why a bird will fly only to a certain height, and how some clouds appear to be at different heights in the sky. Discuss why some airplanes have pressurized cabins.

Related Activities:

1. Have each child write a story about a trip to the highest mountain in the world. Have them describe how they feel when they go up the mountain and explain why their ears pop. (Lang.)
2. Have the class make a chart showing the different layers of atmosphere. (Art)
3. Visit an airport and have a pilot talk to the class about airplanes, and show a demonstration of oxygen masks.

Concept C STARS DIFFER IN MANY WAYS

Outdoor Activities:

1. Have children observe the night sky. Have them determine the direction of the Big Dipper by using a compass. Have them draw what they see. Look for stars that seem to be bigger than others.

2. Have children go out on a clear night and study one portion of the sky with a telescope. Look for stars that seem to be twinkling.

3. At night face the northern sky. Have children hold their constellation chart (Related Activity No. 7) so that the constellations on it are in the same place as these you see in the sky. Write the name of the month on the circle. Go out a month later and repeat the process. You will find that the constellations seem to move across the sky. (The earth is moving).

Related Activities:

1. Have children sketch stars showing different sizes, colors, and temperatures. (Art)

2. Have the class make a star chart of the constellations at different times of the year. (Art)

3. Use a pin to prick holes in black paper to make a picture of a constellation. Attach paper to one end of an open cylinder (oatmeal box). Put a flashlight in the cylinder. Darken the room and flash the constellations on the wall.(Art)

4. Have children make ink prints of stars. Obtain a box of small gummed stars and arrange them on a piece of glass to look like the various constellations. Use these for making ink prints by rolling ink on glass and pressing on paper. Write a legend of the constellation on the bottom.(Art)

5. Research - Have children report on the different legends about how constellations got their names. (Lang.)

6. Have each child make a telescope out of several cardboard tubes placing one inside the other.

7. Have children draw a constellation using black paper with white ink.

Concept D

CLOUDS VARY ACCORDING TO THEIR SIZE, SHAPE AND COLOR

Outdoor Activities:

1. Have children observe clouds over a period of two weeks to collect information to be used in preparing a chart on the color, size and description of clouds.

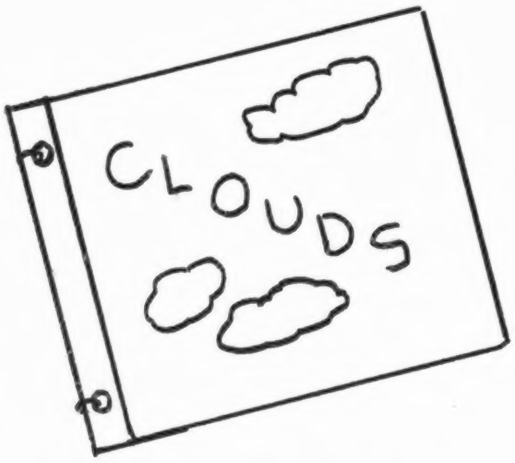
2. Let the class take photographs of different clouds to mount in an album or booklet.

Related Activities:

1. Pour some very hot water into a milk bottle. Place an ice cube in the mouth of the bottle. What happens? Why? (The inside of the bottle becomes cloudy and water collects on the inside of the bottle). The hot water in the bottle evaporates into the air above it in the form of water vapor. When this vapor comes into contact with the ice cube it condenses, or changes back to water, and can be seen as mist or a cloud. Some of it condenses on the inside of the bottle.

2. Have children make a chart showing the different types of clouds. Label each type of cloud and tell what type weather one might expect on that day. (Art)

3. Have children pretend they are taking a ride on a cloud. Describe how it would feel and what they might see on their journey. (Lang.)



Concept E

THE MOON, WHICH GOES AROUND THE EARTH ONCE EACH MONTH, IS DRY, DUSTY AND RUGGED

Outdoor Activity:

1. Illustrate how a crater is formed by throwing rocks or marbles into smooth sand or dirt. Some children will throw theirs with more force than others, thus some holes will be deeper than others. (Discuss the fact that the harder a meteorite hits the moon's surface the larger the craters will be).

Related Activities:

1. Have children make a model of the moon's surface by filling a box with sand and pouring water in the sand. Form mountains and craters in the wet sand. This can also be done by using clay (hardening kind) and forming a replica of the moon's surface. Let the clay harden and paint it different shades of brown or gray, to make it more realistic.

2. Have children write a story about a trip to the moon, describing what they will see when they get there and what they will wear and how they will travel. (Lang.)

3. Have children draw a model of the moon's surface putting in all the features they have learned about the moon. (Art)

4. To show how we see only one side of the moon, cut out two circles, one representing the earth and one the moon. Place a dot on the moon circle. Keep the moon dot toward the earth circle and move around that circle. You will always be facing the same side of the moon circle.

Concept F

OUR SUNLIGHT IS MADE UP OF MANY COLORS (RED, ORANGE, YELLOW, GREEN, BLUE, INDIGO AND VIOLET) AND GIVES OFF HEAT

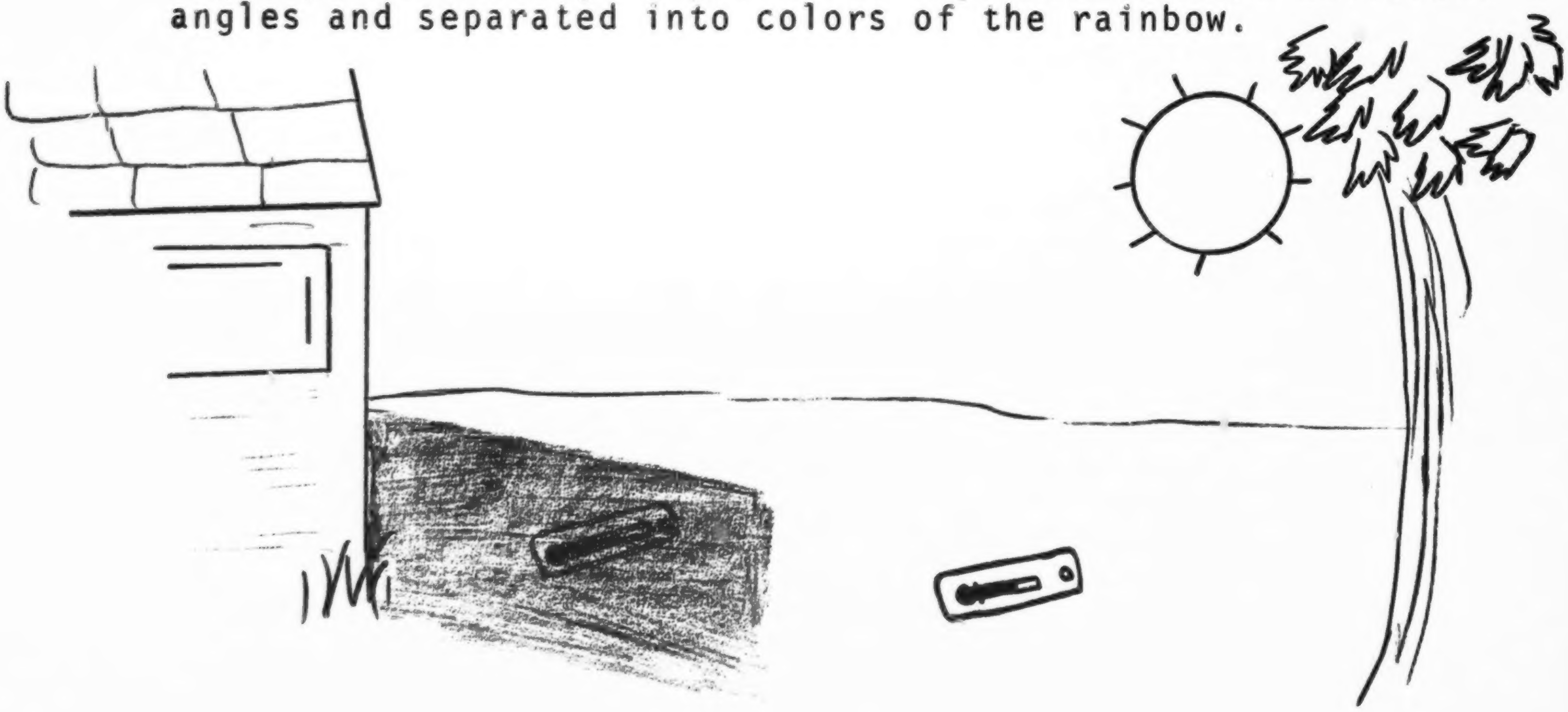
Outdoor Activities:

1. Use two thermometers to check the outside temperature. Place one in the shade and one in the sun. Have children check the temperature in both places.

2. Have children make a rainbow by spraying water into the air from a garden hose. Stand with your back to the sun. The spray reflects the colors of the rainbow because of the way the sun's rays are bent.

Related Activity:

1. Darken the room but allow a ray of sunlight to enter. Hold a triangular glass prism in the ray of sunlight and notice that the colors are always in the same order. As light passes through a prism its rays are bent at different angles and separated into colors of the rainbow.



Concept G

LIGHT FROM OUR SUN TRAVELS IN STRAIGHT LINES

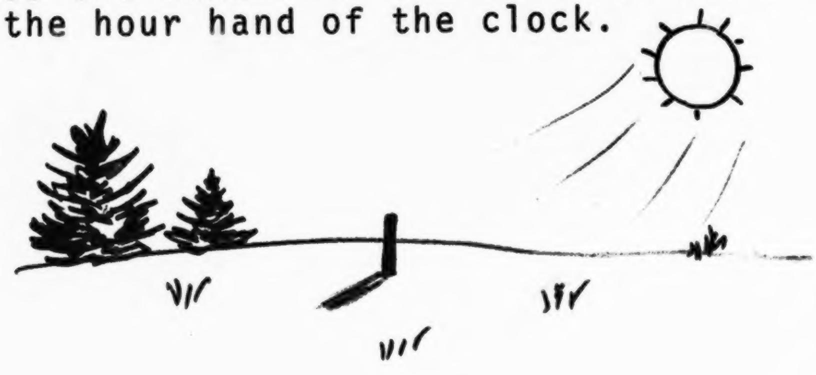
Outdoor Activities:

1. Before the class begins in the morning and every 1/2 hour during the school day, have a student mark on the ground the position of the flagpole shadow. When the last mark is made, have the class observe. As you line up the marks on the ground with the top of the flagpole, they will be able to determine the path of the sun in the sky.

2. Use shadows from different objects (outside). Check the place and time. Have children observe the shadow the next few days to see if it is in the same place on the same hour each day. (If you did not have a clock you could tell time by the sun).

3. Let students go outside and find north by using the sun and a watch. Hold the watch flat in the hand. Place a match, straw or pencil upright along the edge of the watch. Turn the watch until the shadow of the match, straw, or pencil falls directly along the hour hand, i.e. until the hour hand points directly at the sun. Between the hours of 6 A.M. and 6 P.M. a line from the center of the watch, dividing the small angle between the hour hand and the figure 12 will point true south. True North can be found by projecting a line from South to North.

4. Use the sun to tell time. Have children make a simple sundial by placing an upright stick in the ground to cast a shadow. Use the shadow of the stick to read the time just as you do the hour hand of the clock.



Concept H

PLANETS AND SATELLITES MOVE AROUND THE SUN IN AN ORDERLY MANNER

Outdoor Activity:

1. Play the Sun Game on the outside. Select a large student for the sun. The sun must be bright, cheerful, big and strong. He stands in the center of the playground and chooses an earth (smaller child). The sun gives one end of a string to the earth and lets earth move away from him about 20 feet. Now earth chooses his moon, and gives him the end of another piece of string about 5 feet long. The sun holds his string above his head. Earth begins to turn around and around (like in daily rotation) and at the same time travels (revolves) around the sun as fast as he can keep the string off the ground. While this is going on the moon must run around the earth as fast as he can, keeping his string off the ground and also his face toward the earth at all times. This is exactly what the moon does as the (back) side is never seen from the earth. The idea of the game is to see if the moon can run around the earth at least 12 times while earth goes completely around the sun once. All this orbiting makes earth quite dizzy. Slow down a bit and play an eclipse game. Sun, earth, and moon all close one eye. Keep strings tight. Sun and earth stand still facing each other. Moon moves around until earth cannot see sun's face. This is an eclipse of the sun.

Related Activities:

1. Using the words rotate, revolve, orbit and eclipse, have children write sentences telling what the sun, earth and moon did during the game. (Lang.)

2. Have children draw pictures of our sun and its family, placing each member in the correct position from the sun. (Art)

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Unit III - Plants

Concept A

MOST PLANTS HAVE SIX MAIN PARTS: ROOTS, STEMS, LEAVES, FLOWERS, FRUITS AND SEEDS.

Outdoor Activities:

1. Take a hike to observe the six main parts of a plant.
2. Look for designs in the six basic parts of plants. For example:
    a. Circle-berries, center of a daisy, seeds.
    b. Zig-zag tree rings, edges of leaves.
    c. Straight-stems, leaves, veins.
3. Dissect a flower to show the parts. Have the children run their fingers to feel the pollen. Let them taste the nectar. Compare the parts to a diagram of a flower.
4. Have children collect leaves to make plaster casts. Put some modeling clay in the bottom of a box. Press a leaf into the clay and then remove the leaf. Pour plaster of paris paste into the bottom of the box and let it harden. Remove the plaster cast. The final cast may be painted when dry.
5. Let class collect leaves to examine with microscope.
6. Make a collection of different kinds of fruits. Let children identify the trees that each fruit came from.
7. Take a nature walk with children to observe the different shapes of leaves, flowers, and branches. Look for circles, cones, triangles, etc. See how many geometric shapes you can find. (Math.)

Related Activities:

1. Place a sweet potato in a glass of water. In a few weeks observe the roots and foilage growing from the potato.

2. Partly fill a glass jar with water. Sprinkle grass seed on the surface of the water. Place the jar in a warm place, being careful not to shake the jar or the seeds will sink. (In about two weeks the seeds will germinate). Grass appears from the top of the seeds and roots from the bottom. Have children examine the root hairs near the tip of the root with a magnifying glass.

3. Have class make a collection of fruits and vegetables. Cut them in half and press them in paint or on an ink pad. Use these to print designs on paper. Point out that all things in nature have designs. (Art)

4. Have class draw diagrams of the cross section of a typical flower. Label each part. (Art)

5. Have each child write a story pretending he is a plant. Have him tell about the different parts of his body, explaining how he uses the different parts. (Lang.)

6. Let each child draw a plant with colored chalk. Label the parts. Frame it in a construction paper or cardboard frame.

7. Have children make a collage out of things collected on a nature walk. (Examples: seeds, leaves, flowers, twigs, pebbles, grass, etc.) Glue the objects to heavy paper or cardboard to make an abstract design, nature scene, plant or flower. (Art)

8. Make a list of some common plants around the school. Have a contest and see who can spell their names. (Spelling)

9. Have class scrape the back side of collected leaves with a knife. Observe the cells of the leaf under a microscope.

Concept B

ALL GREEN PLANTS TRANSPORT WATER AND MINERALS WHICH ARE NECESSARY FOR FOOD MAKING

Outdoor Activities:

1. Wrap a plant tightly in black paper and let it stand for 5 days. Remove a leaf and boil it in water until it becomes limp. Test for starch by dropping iodine on the leaf. Also make a test on leaves that were not covered.

2. Let class use test in Activity 1 to perform an experiment with non-green plants to see whether or not they contain starch.

3. Using several plants that are alike, fertilize each with different amounts of fertilizer. Have children observe results.

4. Place several grown plants of the same size in loam, humus, moist clay, tap water, rain water, and sand. Have class check the condition of the plants regularly and record their progress.

Related Activities:

1. Put a stalk of celery in a glass of colored water to show how the trunk is used as a pipe line to carry minerals and water to the leaves for food making.

2. To show the function of roots, bore a hole in the broad ends of two carrots. Fill the hole of one carrot about 1/2 full of sugar water or syrup. Fill the other with fresh water. Examine each carrot later to see if each has the same amount of liquid. (The roots of plants have sugar water dissolved in the cell sap. Water in the soil goes into the roots of plants toward the sugar water).

3. Bring some potted plants into the classroom. Cut off the upper part of a stem with a sharp knife. Have class observe. (Drops of water will soon appear where the cut was made). Roots take in water, stems carry water to rest of plants.

4. Using two potted plants, have class observe what will happen when one plant is watered regularly and one is not.

5. Make a test on seeds to show that there is food stored in the small seeds (Iodine test for starch)

6. Make charts predicting results of the experiment mentioned above. Compare chart with your final results.

7. Have class draw a chart comparing the green and non-green plants. Draw examples of each. Use the chart to refer to, as you continue your study.

Concept C ALL GREEN PLANTS NEED SUNLIGHT, AIR, AND PROPER TEMPERATURES

Outdoor Activities:

1. Take children outside to observe plantlife which has been covered with heavy objects

2. Have children observe plants outside that have been damaged by too much heat from sun

Related Activities:

1. Plant some bean seeds in a box and grass seed in another. Place both boxes in a sunny spot and water them regularly. Let the children observe the plants growing toward the sun. Turn the boxes in the opposite direction and observe for a day or two

2. Place a growing plant in a sunny window. Clip small pieces of aluminum foil to the leaves with paper clips. Remove the foil after a few days and let the children see that without sunlight leaves will turn pale green or yellow. The green coloring called chlorophyll helps the plant manufacture food

3. Plant several seeds in two different pots of soil. Water each pot until the seeds germinate and are about two inches tall. Cut a hole in an ice cream carton. Turn the carton upside down over one of the plants. Put both plants near the sun. Remove the carton after a week has passed and compare the plants.

4. Plant a few seeds in two jars of soil. Fill one jar to the top with water to force out the air. Keep the other jar moist. Place both jars in a place where they will have identical temperature and sunlight. Have children watch for results.

5. Plant several seeds in three different jars. Place one jar in a refrigerator, another in a warm oven or warm spot. Keep the third jar at room temperature. Water each one daily. Have children observe the effects after one week.

Concept D PLANTS GIVE US MANY THINGS

Outdoor Activities:

1. Have class examine a telephone pole carefully. Discuss what types of tree it might have come from.
2. Take class on a hike and observe where trees grow and what part of the tree is used by man.
3. On a hike with students observe some of the plants that are edible and which parts are eaten.

Related Activities:

1. Have children collect pictures and make a chart showing foods that are parts of plants.
2. Make a class exhibit of valuable products that we get from trees.
3. Have class collect pieces of cloth that are made from plants. Exhibit them with the plants they came from.
4. Display samples of various types of wood. Have the children think of ways in which wood is used. Examine the school building, home and outside for products made from wood.
5. Have class make collages out of nature materials. (Art)
6. Have each child pretend he is a tree. Have him describe what happens from the time he is cut down until the time he is made into something. (Lang.)
7. Divide fruits into different parts. 1/3. 1/2, 1/4, etc. (Math)

Concept E PLANTS VARY IN THEIR MAKE-UP AND STRUCTURE

Outdoor Activities:

1. Take class outside to collect different types of leaves and flowers for future study.

2. Have children collect leaves from common trees. Discuss and study the different ways leaves are arranged on a stem.

3. Have children make a collection of some green and non-green plants. Discuss what each group has in common and how they differ.

4. Scavanger Hunt: Give each child in the class one object to find. (For example; an elm leaf, an acorn, a parallel veined leaf, an oak leaf, a mushroom). Each child must find his object for the hunt to be a success. Allow them to help each other find their objects.

5. Make different types of terrariums for the classroom. (Nature Science Packet - Baker's Cards 4, 28)

Related Activities:

1. Let children use collected leaves to make spatter prints or blueprints. (See Baker Nature Packet, Cards 19 & 20)

2. With a safety razor blade, take the thinnest possible shavings from freshly cut pieces of cork, tomato, apple, celery, pear, etc. Have children look at the plant shavings under a microscope or bioscope.

3. Divide the class into two groups. Have one half do research on the green plants and one half on the non-green. Set up a panel discussion allowing each child to recite. Booklets, charts, posters, drawings, examples of types of plants, etc., can be included.

4. Have children place leaves and flowers carefully between two pieces of absorbent paper and insert in a leaf press. After a few days remove the leaves and laminate them on heavy cardboard or construction paper. Make a study of the different shapes of leaves and flowers. (Leaf edges, veining, petal shapes) These can also be used as flash cards for the children to use.

Concept F SEEDS ARE SPREAD BY DIFFERENT MEANS

Outdoor Activities:

1. Take children on a hike and collect seeds. Try to figure out how each kind of seed travels.

2. Have children collect seeds with wings. Hold a seed in your hand and let it fall. Notice which part of the seed will hit the ground first. (The weight of the seed helps to plant the seed). Mark the spot where the seed landed. Drop another seed,but this time have a child fan it with a piece of cardboard. (The seed lands farther away. This is to show the effect the wind has on the seed).

3. Have children collect seeds with sails and some without sails. Examine the seeds with sails. (Each has a long stem, tufts of hair at one end and the seed at the other. Some have little hooks.) Blow or fan the seeds. Observe how seeds sail through the air for some distance. Hold some seeds which do not have sails and blow on them. Observe how they fall from your hand but do not travel far.

4. Tie a string to a piece of woolen cloth. Have children walk through an open field dragging the cloth behind them. Examine the "Sticker" seeds that collect on the cloth. (Some seeds steal rides.) Try to identify the seeds.

5. Have children collect different kinds of seeds. Fill a pan with water. Drop seeds into the water. (Some float and others sink in water). Blow across the water. (Some seeds move across the water faster than others).

6. Take children on a trip to collect seeds. Open some of the fleshy fruits and count the number of seeds in each. (Some have only one seed, others have many). Try to find out which animals eat which kind of fruit. Also try to find out whether the animal eats the fruit near the plant on which it grows or whether it carries it away.

Related Activities:

1. Have children write a story about each kind of seed. (Lang.)
2. Have children dramatize the way a seed might travel. (Lang.)
3. Have children observe geometric shapes of seeds. (math.)
4. Have children make original drawings of the seeds. (Art)
5. Let children make seed trees by gluing various seeds to a cardboard cone. Spray the tree with paint.
6. Let children glue collected seeds on cardboard and label.

Concept G PLANTS ARE REPRODUCED IN VARIOUS WAYS

Outdoor Activities:

1. Let the class collect twigs with buds (pussywillow, forsythia) and place in jars of water in a sunny place. Watch the roots appear at the bottom of the twig. After the roots have a good start let children plant them in the soil and watch the plants continue to grow.
2. Have children experiment by placing twigs or leaves of growing plants in water or soil to grow a new plant.

Related Activities:

1. Plant several bean or corn seeds in a box. Dig one up each day and examine to note change.
2. Place tulip or narcissus bulbs in a box of soil. Water daily and observe growth of plants from bulbs.
3. Cut the top off a carrot or sweet potato. Place in a dish of water and watch growth of plant which was started from roots.
4. Show growth of new plants from spores by using bread mold. Scrap strands of the mold and place between two glass slides using a drop of water on the mold. Observe under a microscope. At the tip of each upright thread is a small, round, black knob. The knobs are spore cases containing thousands of tiny spores. When the spore case is ripe it breaks open and the spores land on other parts of the bread and produce new mold.

Concept H PLANTS HAVE DIFFERENT TYPES OF ROOTS

Outdoor Activity:

1. Let children dig up various kinds of roots, including grasses and weeds. Wash the soil from the roots and observe their structure. Discuss how the fibrous (grass) roots cover wide areas, shallow depth, absorbing water from close to the surface. Observe and discuss the tap root (dandelion) long and thick, grows deep into the soil for a deep water supply.

Related Activity:

1. Let the children make a chart showing the kinds of roots.

Concept I TREES GROW AND CHANGE

Outdoor Activities:

1. Take children on a walk in the school yard and nearby vicinity. Discuss the different trees as to color, shape, and changes taking place in different seasons.

2. Take children on a trip to make a study of a stump of a newly cut tree. Discover the age by counting the number of rings (spring layer - light, summer layer - dark). These two rings (or layers) represent one year's growth. Check historical events or a child's age with the growth of a tree.

3. Have children observe a woody plant (tree, shrub, or vine) throughout the year. Watch seasonal changes, measuring twigs at different parts of the plant several times during the spring season. (Check for year's growth).

4. Let children select place and measure square foot or square yard of ground to be used. Take out all plants in a section of land that won't be disturbed. Water daily and see what comes up.

5. With a roller, cover a section of a cut tree with ink. Have a child press a piece of paper on that section of wood. Press gently. An impression of the rings and wood textures will result. (Art)

Related Activity:

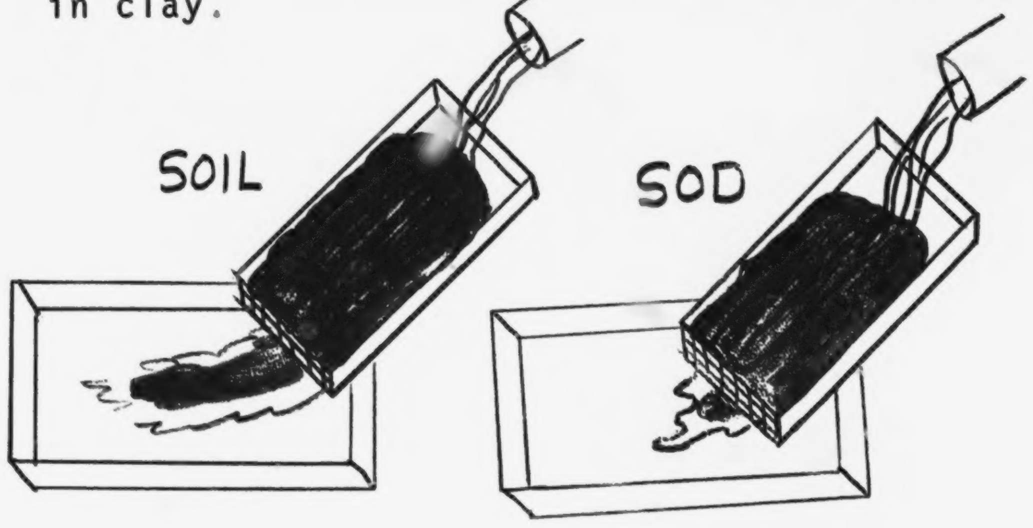
1. Have class keep records of heights of small trees with a growth graph made by gluing strips of colored paper to a piece of cardboard. (Math)

Concept J

PLANTS PLAY AN IMPORTANT ROLE IN CONSERVATION

Outdoor Activities:

1. Have children look for examples of erosion on school ground or nearby school site improvement programs.
2. Let children get samples of different types of soil. Have them look for decaying plant matter and discuss the importance of humus in top soil.
3. Use two shallow boxes with one end knocked out and covered with wire. Fill one box with soil, the other with sod. Rest the screened ends of the boxes on the edge of pans and tilt the other end up on blocks of wood. Sprinkle the same amount of water over both boxes. What happens? (The box of soil loses more water and soil than the box of sod. A ground cover of plants conserves water and soil).
4. Fill two lanp chimneys, one with sand, and one with clay. Fasten paper towels around the bottom of the chimneys with rubber bands or strings. Place chimneys in pan of water. Water will rise in both sand and clay but much higher and faster in the sand. Plants cannot get good water supply in clay.



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How Plants Start Growing	Encyclopedia Britannica
Plants and Seeds	Eye Gate
Plants are Living Things	Encyclopedia Britannica
Plant Life of the Desert	Encyclopedia Britannica
Seeds and How They Travel	Encyclopedia Britannica

Filmstrips: - St. Bethlehem School:

The Conservation of Our Forests	Eye Gate
The Story of Seeds	Eye Gate
The Structure of Plants	Encyclopedia Britannica
Trees - Man's Best Known Plants	Eye Gate
Wildflowers	Eye Gate
Work of Flowers	Encyclopedia Britannica
Plants	Eye Gate
Seeds and Seed Travels	Society for Visual Education

Filmstrips - Clarksville-Montgomery County Library:

Green Plants
Living Things Need Other Living things
Importance of Conservation
Plants Grow
Trees Grow

Transparencies:

Conservation 4 - Our Plant Resources
Conservation 6 - The Story of Trees
Conservation 49 - Plant Structure No. I
Conservation 50 - Plant Structure No. II

Records:

Nature Songs
More Nature Songs

Film Loops:

Growth and Pollination of Corn	Walt Disney
Fruit Ripening	Walt Disney
Flowers Opening	Walt Disney
Seed Dispersal	Walt Disney
Self-Planting Seeds	Walt Disney
Seeds Sprouting	Walt Disney
Carnivorous Plants	Walt Disney

Unit IV - Wild Animals In Our Environment:

Concept A

SOME ANIMALS ARE HELPFUL AND SOME ARE HARMFUL TO MAN AND OTHER WILDLIFE

Outdoor Activities:

1. Have children collect samples of leaves and twigs which have been destroyed or damaged by animals.

2. On a nature walk have children observe as many snakes as possible. Classify them according to poisonous and non-poisonous.

3. Take a field trip to see work done by beavers. (trees, dams) (good, bad).

4. Have the children observe birds and insects cross-pollinating plants. Allow them to taste the nectar and feel the pollen of the honeysuckle.

5. Take a field trip to a farm and observe a black snake in the corn crib. Have the farmer explain to the class that the snake will eat any mice that get into the crib.

6. Have children observe a bee hive and honey. Let children taste the honey the bees have made.

Related Activities:

1. Bring in a piece of lumber to show damage done by termites.

2. Have children observe a piece of wool material that has been eaten by a moth.

3. Bring in a piece of silk and discuss how it was made from the silkworm's cocoon.

4. Have children bring in samples of shoes, pocketbooks, wallets, clothes, etc., made from animal skins. A composition could be written about the processing of leather and skins from animals. (Lang.)

5. Have children make reports on different animals that bite or sting. (bee, snake, mosquito) Tell what we can do to give first-aid for these bites. (Lang.)

Concept B

ANIMALS PROTECT THEMSELVES IN MANY WAYS

Outdoor Activities:

1. Take a nature walk through a forest and have children observe animals that will scurry away as soon as they sense someone approaching.
2. To show how some animals build homes to protect themselves and their young, take apart an old abandoned wasp's nest or bee hive and have children examine how it was made.
3. On a nature walk, investigate the homes of different animals. Discuss the structure of the homes and how the animals are protected from weather and from other animals.
4. Some animals are protected by nature because of their color. Have children observe a praying mantis and show how the green color of his body blends in with the surroundings. (camouflage)
5. Have children observe holes in the ground, caves, and hollow tree trunks where animals have hibernated during the winter months.

Related Activities:

1. Bring a rabbit or pet cat into class and examine its legs. Discuss why these animals are good runners by letting children feel their long legs, and strong muscles.
2. Bring a pet dog to school and examine its teeth and claws. Feel its leg muscles. Discuss why some animals are good fighters.
3. Have children paint a mural including many different animals and show how they protect themselves. (rabbit in a hole, birds flying and migrating, squirrels running up trees).
4. Have children make charts with headings of the ways animals protect themselves. Collect pictures and glue them under the proper heading. (The headings might be Fast Runners, Fighters, Animals Homes, Food Storage, Camoflauge, Migration, Hibernation).

Concept C

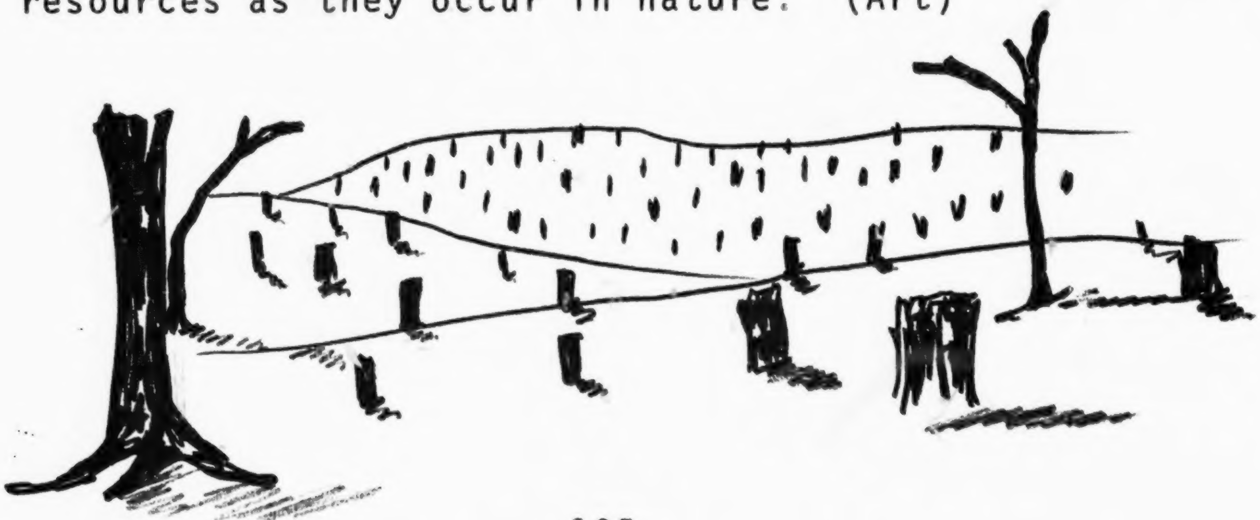
WE DO MANY THINGS TO PRESERVE OUR WILDLIFE

Outdoor Activities:

1. Have class visit a park or forest to learn about trees and wildlife.
2. Have children collect samples of different natural resources. Point out that we are careful not to destroy nature as we make our collections.
3. As a class project, provide winter feeding stations for animals at home and at school.
4. Have children observe a stream of water and talk about why it contains so many impurities. Observe water samples under microscope. Discuss how water purifies itself.
5. Take the children to an area which has been burned. Discuss what happens when someone is careless with fire.

Related Activities:

1. Have a game warden come and talk to the children about how they care for animals in captivity. (Lang.)
2. Have children make a picture scrapbook of some of the things we use and the resources that they came from. (Lang.)
3. Have children prepare a mural illustrating our different resources as they occur in nature. (Art)



Concept D WILD ANIMALS DIFFER IN MANY WAYS

Outdoor Activities:

1. Take students on a field trip to a wooded area, lake, or pond, and list all the wild animals seen. Classify them as to general characteristics.
2. Have children look for animal homes; rock dens, hollow trees, stumps, and ground burrows.
3. With a string, mark off a square foot of soil in different areas. Have children count and compare the number of different insects found.
4. Have children make a bird survey. See how many different kinds of birds live in an area. Try to identify them from prepared bird charts (as to color, shape, size, song, etc.).
5. With the class, make a plaster cast of animal tracks around a pond. Compare these tracks with those of other animals in the area.
6. Have children make a collection of butterflies and moths to mount and classify for display.
7. Construct bird feeders outside classroom and have children observe the different birds as they return from their winter homes. Use discarded Christmas tree for feeder which is "Strictly for the Birds". Place tree in bucket of sand and put it outdoors. Bury the bucket in the ground to keep it from falling over. String cranberries, popcorn, and pieces of apple on thread. Place a mixture of peanut butter and raisins in paper cups and tie them in the tree. You can also tie pieces of suet together and suspend all this food on upper branches of the tree out of the reach of cats.
8. Take a field trip to a nearby woods to observe and collect foods eaten by different kinds of animals.

Related Activity:

1. Take a field trip to the Children's Museum in Nashville to observe the live animals.

Concept E SOME ANIMALS HATCH FROM EGGS AND CHANGE IN GROWTH

Outdoor Activities:

1. Let children collect insects and put in cages to see how they live and grow. Construct cages by using flower pot of soil, twigs, and a lamp chimney. Place the chimney around the twigs which are pushed into the soil. Fasten a piece of cheesecloth over the top of the chimney with a piece of string. Another insect cage can be made by using a coffee can, twigs with leaves, a flower pot of soil and a piece of screen wire. Push the screen wire into the soil, curving it around the twigs, and overlapping the sides of the wire. Put the insects in it and turn a coffee can upside down over the top of the screen. Observe to see if insects lay eggs.

2. Take a field trip to collect caterpillars or cocoons to be observed in classroom.

3. Find a spider and compare it to an insect. Notice the general characteristics of insects and how they are different from the spider. Look for an egg sac.

4. Have children observe plant galls and the insects that produce them. Cut open galls to see insect eggs or larvae.

5. Have class study life history of the mosquito by collecting mosquito eggs in glass jars of water. Eggs may be found floating in small masses on the surface of water in ponds, or any stagnant water. Take them to the classroom in the same water in which they were found. Fasten cheese cloth over the top of the container and watch them as they hatch from eggs, change from larva to pupa, and finally into an adult.

6. Let the children collect frog eggs and observe them as the tadpoles hatch. The changes whicn take place as they grow and develop could be recorded on a chart.

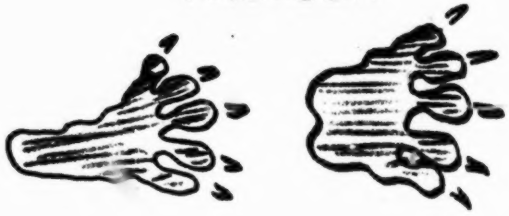
7. Have children observe as you seine a pond for fish. Place the fish in small jars with pond water. Observe the general make-up, characteristics of the fish, how they use their body parts, how they take in their food and what they eat.

8. Follow some animal tracks. Let the children reconstruct the story and tell where the animal might have been going. (Lang.)

Related Activity:

1. Use the collected caterpillars and cocoons to observe metamorphosis of the insects.

RACCOON



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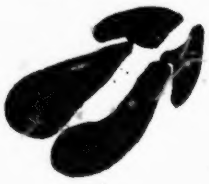

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Science
Unit IV

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Observing Birds in Nature	Encyclopedia Britannica
Discovering Reptiles	Encyclopedia Britannica
What is a Vertebrate?	Encyclopedia Britannica
Discovering Fishes	Encyclopedia Britannica
Discovering Amphibians	Encyclopedia Britannica
Discovering Birds	Encyclopedia Britannica
Discovering Mammals	Encyclopedia Britannica
Different Kinds of Worms, (Animals without Backbones)	Encyclopedia Britannica
The Snail and Its Relative	Encyclopedia Britannica
Insects - What they Are	Encyclopedia Britannica
Insects - Their Life Cycle	Encyclopedia Britannica
Helpful and Harmful Insects	Encyclopedia Britannica
Social Insects	Encyclopedia Britannica
Some Different Kinds of Insects	Encyclopedia Britannica
Birds of the Countryside	Encyclopedia Britannica
Birds of the Forest and Woodland	Encyclopedia Britannica
Birds of the Village and Towns	Encyclopedia Britannica
Birds of the Garden	Encyclopedia Britannica
Conservation of Wildlife	Eye Gate
Homes - The Wonders of Nature	Eye Gate
Interesting Animals	Eye Gate
How Animals Live	Eye Gate
Animals Grow and Change	Eye Gate
Living Things	Society for Visual Education
Life in Ponds, Lakes, and Streams	Jam Handy
Birds and Their Songs - Part I - Larger Birds of Woods and Gardens	Museum Extension Service
Birds and Their Songs - Part 2 - Smaller Birds of Woods and Gardens -	Museum Extension Service
Birds and Their Songs - Part 3 - Birds of Open Fields and Meadows	Museum Extension Service
Birds and Their Songs - Part 4 Birds of Rivers, Marshes and Seashores -	Museum Extension Service
How Animals Live in the Air	Education Projection Corporation
How Animals Live in the Sea	Education Projection Corporation
Bird Study: Beaks and Feet of Birds	Society for Visual Education

Transparencies:

5 - Our Animal Resources
39 - Study of Birds
44 - Animal Life

Records:

Birds, Beasts, Bugs and Little Fishes
Spring Morning
Birds on a May Morning
Songs of the Forest
The Songs of Insects
Voices of the Night
The Swamp in June
The Brook
More Nature Songs
Nature Songs

Filmloops:

Birds Building Nests	Walt Disney
Birds Feeding Their Young	Walt Disney
American Migratory Birds	Walt Disney
Courting Ritual of Birds	Walt Disney
Bird Tricks for Survival	Walt Disney
Queen Bee Laying Eggs	Walt Disney
Swarm of Bees	Walt Disney
Queen Bee Duel	Walt Disney
Raising a Queen Bee	Walt Disney
Ants Tunnel Building	Walt Disney
Anthill Protection - Part I	Walt Disney
Anthill Protection - Part 2	Walt Disney
Leaf Cutting Ants	Walt Disney
Bats	Walt Disney
Water Birds Gathering Food - Part I	Walt Disney
Water Birds Gathering Food - Part 2	Walt Disney
Eagle	Walt Disney
Desert Snakes	Walt Disney
Rattlesnakes	Walt Disney
Beaver	Walt Disney
Beaver Dam and Lodge	Walt Disney
Coyote	Walt Disney
Ground Squirrel	Walt Disney
Water Animals Hunting Food - Part I	Walt Disney
Water Animals Hunting Food - Part 2	Walt Disney

Unit I - Indians and Pioneers

Concept A — INDIANS AND PIONEERS LIVED OFF THE LAND AROUND THEM

Outdoor Activities:

1. Have children collect nature materials and make replicas of different Indian and Pioneer homes.
2. Have children make dyes from plant sources. (Refer to Book of Indian Life Crafts, Page 94)
3. Have children collect nature materials and make replicas of the different transportation vehicles used by the Indians and Pioneers. (Canoes, boats, travois, covered wagons, etc.)
4. Plan an Indian and Pioneer menu with the class. Have a cookout and serve the foods used by each group.
5. Have children collect nature materials such as acorns, nuts, seeds and pebbles to make Indian jewelry.

Related Activities:

1. Have children make Indian pottery from clay. Paint the finished pottery with tempera paints and shellac.
2. Have children make a totem pole like those used by the Northwest Indians. They are easily made by stacking oatmeal boxes that have been decorated with construction paper and Indian designs and faces. (Art)
3. Have children make Indian ceremonial masks from paper bags. (Art)
4. Have children use tin cans and sticks to make Indian Rattles. Fill the cans with pebbles and decorate them. (Art)
5. Have children make Indian head-bands from construction paper. Paint them and use feather for realism. (Art)

6. Have children make a display of arrowheads, Indian crafts, and objects used by the pioneers.

7. Have children make horn books used by the Pioneers. (Art)

8. Distribute small paper tepees to each child for every Indian or Pioneer book he reads. Assemble the smaller tepees to form one large class tepee. (On wall or bulletin board) (Reading)

Concept B INDIANS COMMUNICATED IN MANY DIFFERENT WAYS

Outdoor Activities:

1. Follow a nature trail using Indian signs and symbols to communicate a message. (Refer to Book of Indian Life Crafts, Page 117)

2. Take the class on an Indian hike. Go in single file, very carefully. Try not to make a sound. Avoid stepping on dry twigs or through dry leaves. Don't talk above a whisper. Stop frequently to listen as well as to look. What sounds can be heard?

3. Have children experiment communicating through sound as the Indians did. One person kneels and puts his ear to the ground. The others tramp in place, some distance away. Try to find out how far away they can be and still be heard.

4. Take the class outside and teach them the step and sequence to an Indian Dance. (Refer to Indian Crafts and Lore, Page 82-83.)

Related Activities:

1. Have children make a chart of signs and symbols of language used by the Indians.

2. Let children write stories, using Indian signs and symbols, to share with the class.

3. Have children list Indian names and expressions used today; rivers, lakes, counties, provinces, etc.

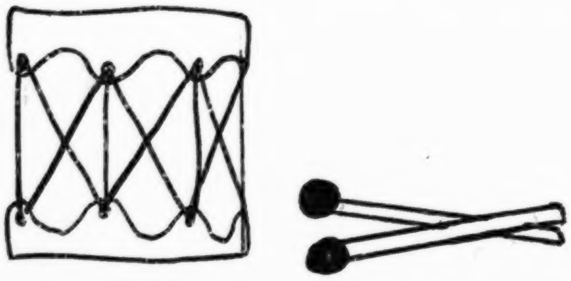
Concept C INDIANS AND PIONEERS FOUND TIME FOR SONG AND RECREATION

Outdoor Activities:

1. Take the class outside and have them form a circle. Sing and dance the song "Brothers Let Us Dance" (Third Grade - Rhyming and Singing Album)
2. Have the Physical Education teachers work with the children on Indian Rhythms during their Gym period.
3. Make some Indian games and let the class play them. (Loop and Arrow Game, Hidden Ball Game, - See Book of Indian Life Crafts.

Related Activities:

1. Have children make Indian drums to be used with the Indian dances.
2. Take the class on a trip to the Children's Museum and observe Indian relics, musical instruments, etc.
3. Dramatize some of the Indian beliefs about their Gods, evil spirits, religious ceremonies, etc.



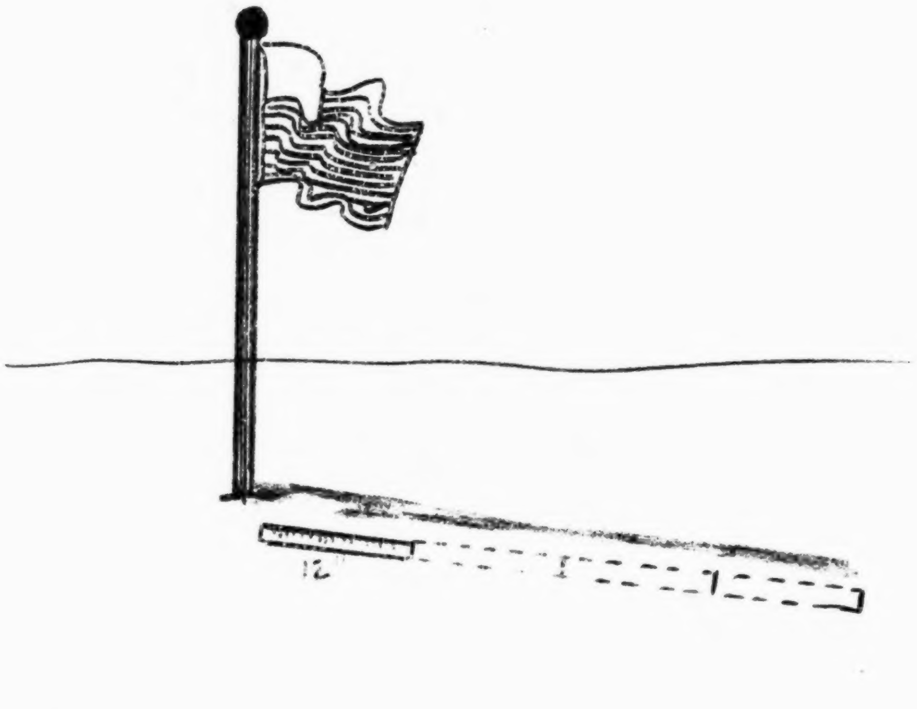
Concept D

THROUGH OBSERVATION THE INDIANS WERE ABLE TO LEARN MUCH ABOUT THE NATURAL ORDER OF THE UNIVERSE

Outdoor Activities:

1. Have children measure the shadow of a fixed object (such as a post or flag pole) morning, noon, and afternoon for a number of days. Let children draw conclusions as to how the Indians told time by the shadows.

2. Take the children outside and have them discuss and explain the changes that they think will take place with the next few days, weeks and months. Discuss whether or not the same occurences would likely take place if we did not know the day, month, or year. Relate this to what the Indians learned through observation and personal experience about the natural order of things.



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Daniel Boone	Education Record Sales
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Pioneers	Society for Visual Education
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Boyhood of Lone Raven	Encyclopedia Britannica
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Unit II - Communications

Concept A

FROM THE BEGINNING OF TIME MAN HAS COMMUNICATED THROUGH SIGNS AND SIGNALS

Outdoor Activities:

1. Build a fire outdoors and demonstrate how to send smoke signals.

2. Demonstrate how to make charcoal from burnt wood, or coals. Let children draw pictures on rocks or slate as the cavemen did.

3. Let children use mirrors to send messages. Have a code prepared to follow if you wish.

4. Have children send signals with flags. Explain how the flags held at different positions mean different things.

5. Have children use Morse Code to send messages.

6. Have children use drums as the Indians did to send messages.

7. Have the class demonstrate the "pony express" method of sending messages by running with messages from one to the other on the school grounds.

Concept B

MODERN MAN HAS CONTRIBUTED MUCH TO IMPROVE COMMUNICATION

Outdoor Activities:

1. Have children use a walkie-talkie outside. (Invite someone from Fort Campbell to demonstrate its use).
2. Have children observe street signs, policeman's signals, advertisements, etc. Discuss how we can communicate through the "written word".
3. Take a walk around the school neighborhood. Spend some time discussing the many things connected with communications (mailboxes, telephone poles and wires, electric wires, airplanes, trains, postman, etc.)

Related Activities:

1. Take a trip to the Telephone Company.
2. Visit a newspaper office and newstand.
3. Visit a radio or T.V. station.

Concept C

ANIMALS, INCLUDING MAN, COMMUNICATE IN MANY WAYS

Outdoor Activity:

1. Visit a farm to observe the animals and how they communicate with each other and also how man communicates with them.

Related Activity:

1. Bring a trained dog to class. Demonstrate how man communicates with animals through commands.

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The Community Series Communication - Television	McGraw-Hill
The Community Series Communication - Radio	McGraw-Hill
The Community Series Communication - Motion Picture	McGraw-Hill
The Community Series Communication - The Telephone	McGraw-Hill
The Community Series Communication - Books	McGraw-Hill
The Community Series Communication - Communicating Without Words	McGraw-Hill

Unit III - Our City, State and Community

Concept A

THERE ARE MANY FACILITIES AND SERVICES IN OUR COMMUNITY

Outdoor Activitiy:

1. Let children take photographs of important facilities, points of interest, factories, land marks, etc., to be used in making a class album.

Related Activities:

1. Let children use photographs of facilities and points of interest in our community to make individual or class albums.

2. Take the class on a field trip to the water plant, health department, B.F. Goodrich Company, Acme Boot Company, Trane Company, Frosty Morn or Clarksville Foundry and Machine Works.

Concept B

THERE ARE MANY HISTORICAL PLACES OF INTEREST IN OUR COUNTY

Outdoor Activity:

1. Take the class on a field trip to Dunbar Cave, Old Covered Bridge (Port Royal), Valentine Sevier Station, Ringgold Water Wheel Mills.

Related Activity:

1. Have a resource person come in and talk about the settling and building of our county. (Examples - Mrs. Ursula Beach, Mrs. Marion Hammer or Mrs. C. H. Moore, Mrs. Robert H. Alley, Judge William O. Beach).

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Concept A ALL FIVE SENSES CAN HELP IN DISCOVERING THINGS

Outdoor Activities:

1. Take children on a nature walk. Have them listen and describe the sounds made by birds, insects, rustling of leaves, etc., and write a descriptive paragraph about what they hear.
2. Let the children listen to the sounds of nature on a nature walk, and have them think how to describe the sounds they hear. Have them close their eyes and raise a finger for each different sound they hear.
3. Have children find some honeysuckle and other flowers and leaves. Allow the children to taste them. Follow this up by having them write a short story about how the things tasted. (bitter, sweet, sour, etc.)
4. Weave sounds into a story by letting each child (or a small group) select one source (animal, vehicle, etc.) and imitate its sound each time it is mentioned in a story.

Concept B ONE CAN LEARN NEW WORDS THROUGH INVOLVEMENT IN OUTSIDE ACTIVITIES

Outdoor Activity:

1. Take the class outside to find something in nature that begins with a, b, c, etc.

Related Activities:

1. Have children make one-sentence descriptions of things they observed on a nature walk.
2. Have children do research on something they observed on a nature walk that they would like to find out more about.

Concept C INFORMATION CAN BE GAINED THROUGH ORGANIZATION

Outdoor Activities:

1. In an outdoor setting, have groups of children make up informative clues about an animal or plant that lives in that environment. Let the rest of the class guess what they are describing.

2. In a wooded area, play a game of blinding and describing. Blindfold each student and give each an object to describe.. Have the class identify the object being described by the clues that are given.

Related Activities:

1. After a trip outdoors, help the children to organize sense impressions by putting a list of words on the board of things that they have tasted, heard, seen, felt, and smelled on their nature walks. Have them classify the words under the proper sense heading. (For example, the sound of a bird - What we heard; honeysuckle - What we tasted).

2. After a nature walk, field trip, Indian games, or outdoor dancing, have the children write letters to someone telling them about their experiences.

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Concept A

GEOMETIRC SHAPES CAN BE FOUND IN NATURE

Outdoor Activity:

1. Take a walk with the children. Observe and list all the different geometric shapes you find in nature. (flowers, leaves, stems, trees, shapes, of animals bodies, etc.)

Concept B

THE OUTDOORS PROVIDES MANY OPPORTUNITIES TO LEARN AND USE MATHEMATICS

Outdoor Activities:

1. To help with addition and substraction, take the children outside and form sets of nature objects. (Join and petition sets)
2. Have the children estimate the distance between two trees. Pace the distance off and compare answers.
3. Have the children use a thermometer to check temperature in the shade, sunlight, and soil.
4. Have the children experiment with the use of the compass. Make a compass trail to follow.
5. Have the children tell the time of day by the sun. (Refer to the Unit II, "What's In The Sky", Concept H-Activity 5).
6. Divide the class into two groups - Romans and Arabs. Each group will be given a slip of paper with four nemerals on it. (Like 8-4-9-1 or 5-3-1-6) The numbers are different on each slip. Each group is to act out (no speaking) with body positions or postures, their numbers. The other group is to guess what number they are trying to show. The Arabs will be using Arabic numberals, and the Romans will use Roman Numerals.

Related Activity:

1. Have the children estimate the cost of the food for the Indian cookout. (Refer to Indian Unit - Concept A, Activity 4).

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Regrouping Ones and Tens	Eye Gate
Vocabulary of Sets	Popular Science Company

Transparency:

History of Measurement - Science No. 20 E

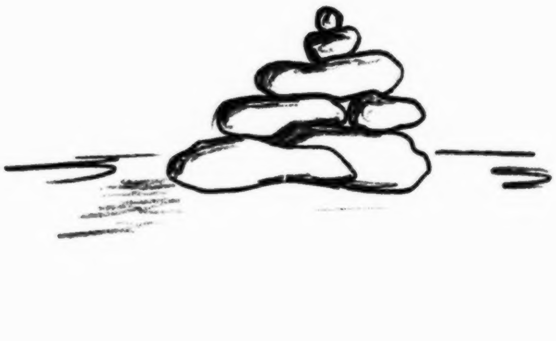
Concept A

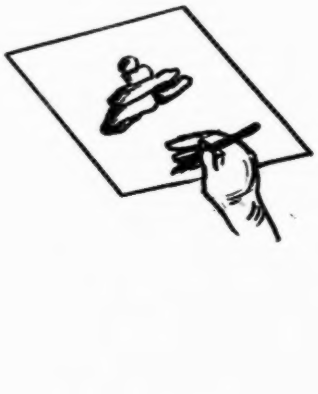
THERE IS A VISUAL RELATIONSHIP BETWEEN ART AND NATURE

Outdoor Activities:

1. Have the children make a collection of a variety of nature forms. These may range from dried insects to pine cones and sea shells. Have at least three nature forms for each person. Supply a paper bag for each person, plus one extra. Have someone pack three shapes in each bag. Clear a table or shelf for a display of the objects. Give each child a bag and ask him to pick out two objects, on the basis of touch alone, that seem to be related to each other. Give each child sufficient time to explore and feel the objects. After everyone has had time to describe (without naming the object) the texture, shape, and feel of the objects, ask them to extract the most unrelated objects from the bag. Discuss how the sense of touch does not always correspond to our sense of sight. We describe something differently when we can only touch it and not see it. A follow-up to this important lesson (discovery of the texture and shape of different objects) could be to group them in sets, for example - plant life, animal life, etc.

2. Have children make a collection of pretty rocks and pebbles. Discuss these shapes and textures. Have the children group the rocks into pleasing arrangements and, with charcoal, sketch pictures of the arrangements. A lesson (very elementary) in shading can be taught here also. The rocks will be lighter on the side facing the sun and darker on the other.



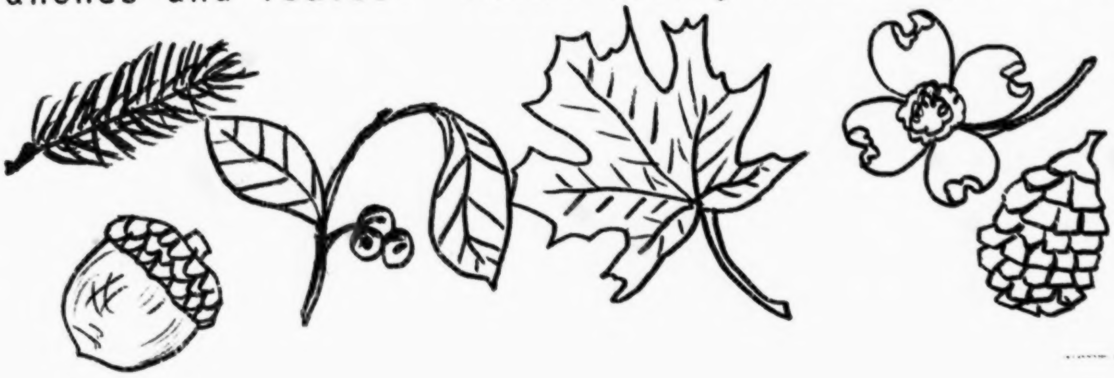


Concept B THERE IS RHYTHM AND BEAUTY IN NATURE

Outdoor Activities:

1. Take the class outside where there is a wooded area. Have them sit on the grass and tell them that they are going to pretend that their eyes are the eyes of a camera. Tell them to observe things around them and above them such as a bird or tree. They should look for things that are made up of different kinds of lines (zigzag, straight, curved, and wavy) and lead them to the conclusion that all things in nature are made up of some kind of lines. Have children make sketches of the things they observed using the different types of lines (rhythms) that they were made up of.

2. On a fall equinoxial day, when a feeling of change is in the air, take children outside to observe the darkening sky, the clouds, the direction in which the wind is blowing, the birds seeking shelter, the appearance of trees and leaves and so on. As they observe the on coming storm, help them discover the beauty and rhythm in the swaying branches and leaves. Paint stormy weather pictures.



Concept C

NATURE PROVIDES US WITH MANY MATERIALS WHICH WE CAN USE IN OUR ART PROGRAM

Outdoor Activities:

1. Take children outdoors to find a flowering plant to be used as a subject for realistic drawings from nature. Tell them that when they draw a reaslistic picture they should study it before they begin. Use colored chalk and a neutral colored paper for a pleasant effect.

2. Take children outside to collect natural materials for a collage. Stimulate the activity by discussion-landscapes or animal scenes. It should be pointed out that they are to have a plan in mind before they begin and that they should not haphazardly glue materials to the paper.

3. Take children outside to collect stones and shells for individual mosaics. Each child fills a shoe box cover with plaster and sets the stones and shells in this as it dries. Sometimes the design is made in the bottom of the box first and then the plaster is poured around the articles. If stones or pebbles alone are used, they may be painted with tempera in interesting designs.

4. Have children make jewelry by collecting various nuts, seeds, and berries. String them on thread, yarn, or string and tie at the ends.

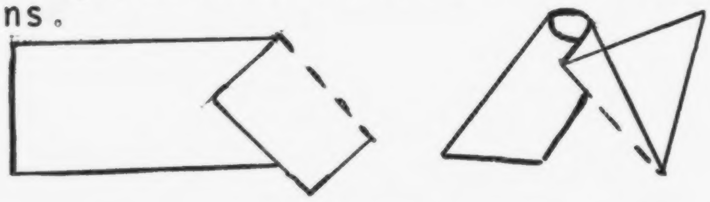
5. Have children collect pine cones. Spray-paint them green and glue small seeds, berries, etc. to the ends. (Christmas decorations).

Related Activities:

1. A useful gift for Mother can be made from water and earth clay. Have children roll out pieces of clay by hand to a thickness of about 3/8". Using a sharp-edged or pointed modeling tool, cut out a leaf shape and add a surface design of leaf veins. If the edges are slightly curved, the shape will hold the spoon better. Variety might be attained by "inlaying" clay of different colors. Allow the finished product to dry thoroughly.

2. Winter, spring, summer, or fall can be shown by means of shoe-box diorama. Discuss the characteristics of each season. Have children begin by designing a background and then adding the animals, and trees, etc. (This will also show how the animals adjust to the change of seasons). These dioramas may be made as individual or group projects. The size of the box and the degree of detail should be adjusted accordingly. Have the children begin with the background using paint, crayons, or clay. Paper figures can be made to stand by means of hinges attached to their bases and pasted to the ground.

3. Indian tepees can be "built" from heavy brown construction paper and twigs. Ask the children to make outdoor and Indian designs on their paper with crayons before beginning construction. The twigs glued inside the top opening of the tepee add realism. The finished tepees could be arranged to make a village scene, adding other realia such as Indian figures, bark canoes, and trees. (Early Pioneers and Indians.



4. Interesting designs can be created with vegetables. (Carrots, potatoes, cucumbers, cabbage, corn, green peppers, and pears make interesting shapes). Others, like corn on the cob, can be rolled in the ink and then on the paper for a polka dotted effect. The potato can be cut in half and a design carved out in the top of one half. It can then be used as a rubber stamp. Use various colored ink pads and paper for a pleasing effect.

5. Paint, draw, or use colored chalk to make a class mural on a large piece of brown paper. Have children sketch in their design before applying the paint or crayon. (This mural can be done on animals and their homes, Indians, or plant life).

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Concept A THERE IS MUSIC IN NATURE

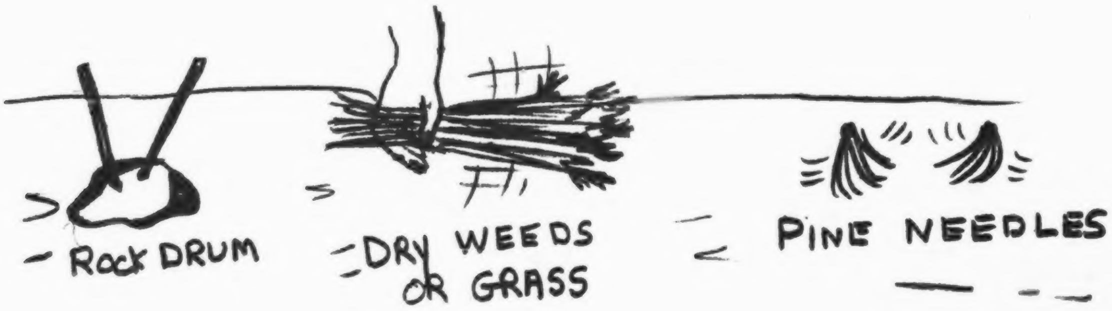
Outdoor Activities:

1. Have the children sit quietly on the grass and listen for sounds of nature. (birds singing, rustling of the trees, buzzing of the insects, etc).

2. Take the children outside to do some Indian dancing and singing.

3. Have the children form a band by making musical instruments out of nature materials. (stones, sticks, dry grass, seeds, etc.).

4. Name that Tune: The person who is IT selects a familiar song and beats out the rhythm. He taps with a stick on the ground or on wood, or claps with his hands. He can also tap two sticks, rocks, or blocks of wood together. The group asks, "yes" or "no" questions, to help them guess the name of the song. "Is it a song from a movie?" "Do we sing it in school?" etc.



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Spring Morning
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Songs of the Forest

Concept A

KNOWLEDGE OF HAZARDS AND SAFETY PRECAUTIONS MAKES IT POSSIBLE TO LIVE, LEARN, AND PLAY SAFELY IN THE OUTDOORS.

Outdoor Activities:

1. Take the class on a walk to learn to identify poison ivy by its leaves, woody branches, or vines; and by the fruit.
2. Take the children outside to work with some gardening tools to teach the proper use of them.
3. Take the class to an area where there is a hill. Practice going up and down the hill safely by avoiding sharp rocks and glass, stopping for rests so they do not become fatigued. Test rock piles to make sure that they are secure before stepping on them.
4. Take the class outside and teach the children how to build a safe fire. Point out the proper way to extinguish it by pouring water over it, or by covering it with dirt. Scatter the coals to make sure it is completely out.
5. Take the class on a hike through a wooded area. Teach the children how to mark the trail with rocks and twigs so they will be able to find their way back.
6. Take the class out to the playground. Teach them safety rules about the swings, see-saw, monkey bars, etc.

Concept B

WE CAN USE THE OUTDOORS FOR COOKING, EATING AND PRESERVING FOODS

Outdoor Activities:

1. Have a cookout with the class. Hold meetings prior to this to plan a good healthy meal, to list equipment and food needed, and to decide responsibilities of each class member.
2. Have class preserve foods by letting them dry out in the sun. Place some fruits, such as apples and peaches, on a piece of wood or on the roof where they will be in the direct sunlight. Point out that by using this method none of the vitamins are lost. These foods can be kept in a bag until needed.

Concept C

THE OUTDOORS IS A GOOD PLACE TO KEEP PHYSICALLY FIT

Outdoor Activities:

1. Leaf Relay: Divide the players into several teams. Have them collect leaves from a number of different kinds of trees. Collect as many leaves from each tree as there are teams. For every team, make a leaf pile consisting of one leaf from each tree. Place this pile at a set distance in front of each team. The teacher calls the name of a tree, then says "Go"! The first player in every team runs to his pile of leaves, finds a leaf from the tree named and holds it up. A point is scored for every leaf named correctly. The leaves are returned to the piles and the players go to the ends of the lines, and the game begins again.

2. Cats and Birds: One player, the cat, is blindfolded. The other players, the birds, are grouped and each given a number one through five. The groups scatter and settle themselves within easy hearing distance. The cat creeps along, stops and says, "Meow" one or more times. (The number of "meows" indicates the group of birds that is to answer). The birds answer by giving a bird call. The cat tries to guess the player's name. If the bird is guessed, the cat continues with another series of "meows". If the bird was not guessed in three tries the bird becomes the cat and is blindfolded.

3. Acorn Run: All players but the one who is "IT" stand in a line with hands held palms together, in front of them. The one who is "IT" goes along the line with an acorn held in his hands and slides his hands between the hands of each player, leaving the acorn in one player's hands. This player must run to a designated goal without being caught by the other players. He need not start running at once, but must start before "IT" has reached the end of the line. "IT" does not chase him. The player who succeeds in reaching the goal line and returning without being tagged, or the player who tags him, becomes the next one to be "IT".

4. Take the class outside for a guessing game on moving things in nature. Let each child select something in nature which moves and imitate its movement. The rest of the class must guess the object being imitated.

5. Take the class outside for Tug of War Games.

Concept D

OUTDOOR PLAY HELPS KEEP ONE PHYSICALLY FIT

Outdoor Activities: (Playground Games)

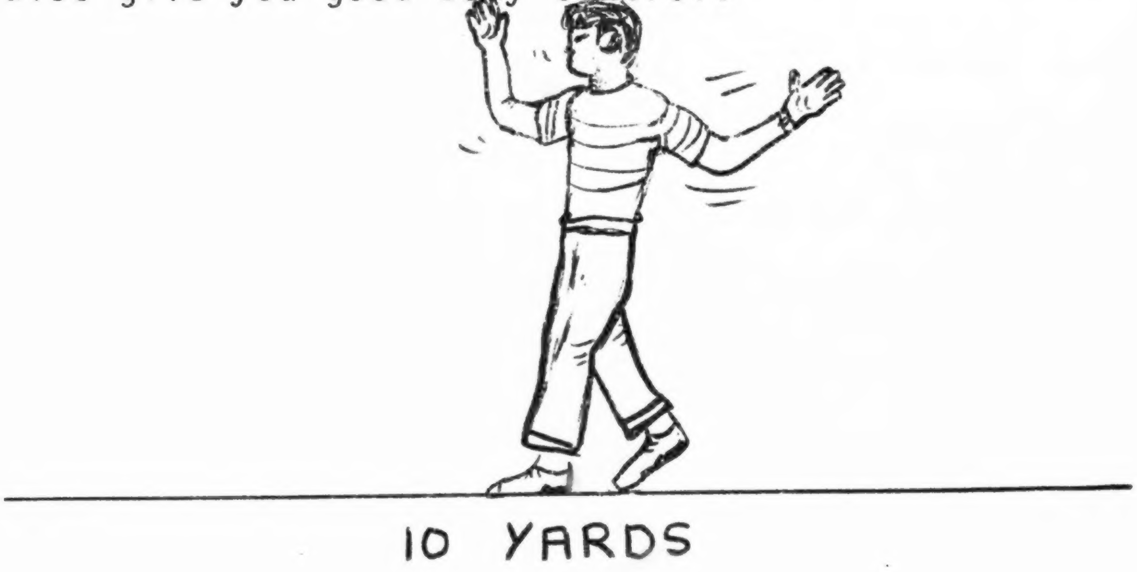
1. Arm Circles: Stand with your feet together and raise your arms sideward to shoulder height with palms facing upward. Move both arms backward in a 12 inch circle. Keep your arms straight and put some zip into these circle drills.

2. Windmill Twist: Stand with your feet spread wide apart, raise your arms sidewards to shoulder level. Bend trunk forward until your head is on a level with your hips. Do not bend your knees. Twist your body and touch your right toe with your left hand. At the same time, whip the right hand upward and back. Repeat to the right and left with a strong whipping motion.

3. Balance Drills: Tightrope walk by walking step by step, backwards and forwards along a line for 10 yards.

4. Book Balance: Place a book on your head - with hands on hips, walk forward 10 feet.

5. Skipping rope, throwing or punting a beachball, or football games also give you good body control.



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Your Teeth, and Their Care	Jim Handy
Your Eyes at Work	Jim Handy
How Your Ears Work	Jim Handy
Your Nose and Throat	Jim Handy
Your Heart and Lungs	Jim Handy
Primary Health Series - Keeping Clean	McGraw-Hill
Primary Health Series - Strong Teeth	McGraw-Hill
Primary Health Series - Rest and Sleep	McGraw-Hill
Primary Health Series - Straight and Tall	McGraw-Hill
Primary Health Series - Foods for Health	McGraw-Hill
Keeping Well	McGraw-Hill
Junior Safety Series - Safety at Christmas	McGraw-Hill
Junior Safety Series - Safety on the Bicycle -	McGraw-Hill
Junior Safety Series - Playing Safely	McGraw-Hill
Junior Safety Series - School Bus Safety	McGraw-Hill
Junior Safety Series - Home Safety	McGraw-Hill
Junior Safety Series - Street Safety	McGraw-Hill

Records:

Health and safety
World of Fun Series (Nancy Harris' Collection)
Folk Craft Records

Grade 4
Science
Unit I

Unit - Ecology (Birds, Insects, & Trees)

Concept A ALL THINGS IN NATURE DEPEND ON EACH OTHER

Note: In this unit, conservation and protection of all plants and animals should be emphasized.

Outdoor Activities:

1. Select an area on the school yard as a setting for an ecology study. Take several trips to this area noticing and identifying plant and animal life (including birds and insects). This should include digging in the ground also. Notice animal homes and their location - relate to the plant life available in the area and other characteristics as possibilities for protection and food.

2. After close study and observation of above area, begin to collect small specimens from it to build a terrarium in the classroom. The terrarium should be as nearly like the area as possible (devoid, of course, of the larger animals).

Note: Collecting should be limited to groups or class, not individuals. (depletion)

Related Activities:

1. Observe and study growth and changes in the terrarium as well as in the selected outdoor area. Take notes on changes and keep a classroom, as well as individual notebook.

2. Slowly remove from the terrarium essential items. Notice the changes that occur and the dependence structure. For example, remove small green plants, larger green plants, insects, study in terms of water vapor, oxygen, and food supply.

3. Make a map for display of the selected area and label trees, plants, animals and animal homes. (Recommended for smaller groups).

4. Take plaster prints of animal tracks found in area. (Art, Unit I, Concept A). Place food in a sandy area in the woods surrounded by a large area of mud. Replace food and check for tracks daily.

5. Use binoculars for bird watching in area.

Concept B

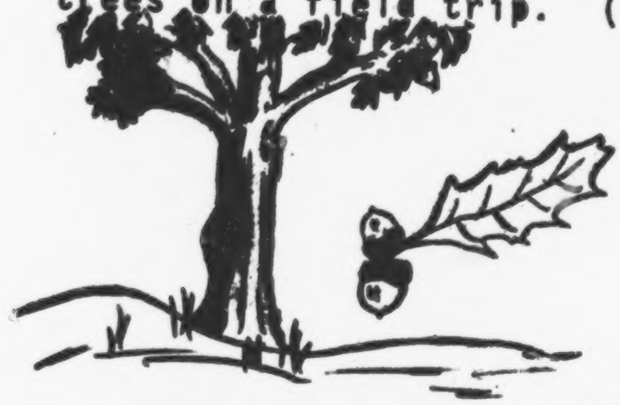
BROAD-LEAF AND CONIFER TREES MAKE DIFFERENT ENVIRONMENTS

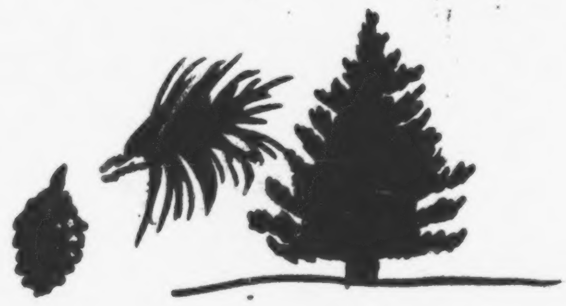
Outdoor Activities:

1. Take a field trip and gather specimens of broad-leaf trees and conifers (samples of leaves, bark, and fruit or seed). Notice location where found.

2. Go on a tree sketching trip. Go back to selected ecology area and identify conifers and broad-leaf trees found there. Notice their location in relation to sun, shade, nearness to water, and nearness to other trees. Look for conifer and broad-leaf seedlings on school yard. Predict future tree landscape of area. Notice birds or nests in conifers and in broad-leaf trees. Identify birds that prefer one to the other. (Example-Cedar Wax Wing) Relate nesting habits of these particular birds to food available on trees (seeds, fruit, nuts, insects, worms, etc).

3. Make an unlabeled tree map of school yard on a large chart. Have children study map and later identify these trees on a field trip. (Baker Nature Study Packet, Card 87)





Related Activities:

1. Set up a display in class of samples gathered with fruit, leaf and bark of each tree labeled and placed together. Cover with clear contact paper.
2. Study vein structure of each leaf collected as well as bark texture of the tree from which it came.
3. Make a chart of the differences between conifers and broad-leaf trees. Transplant a seedling of each in the classroom and compare growth.
4. Compare the ability of conifer and broad-leaf trees to give off water. Place mercury in the bottom of two test tubes. Seal the test tubes with two corks that have holes through them. Through the corks into the test tubes, place a pine twig and maple twig (both with leaves). Compare the length of time each takes to absorb the mercury. Relate this to the reason why conifers can keep their leaves all year round.

Concept C

THE THREE MAIN PARTS: CROWN, TRUNK AND ROOTS, FUNCTION TOGETHER TO SUPPORT LIFE.

Outdoor Activities:

1. Select a few trees and examine them for their main parts. Notice any exposed roots due to erosion (Notice differences in structure).
2. If available, locate a tree root with primary and secondary exposed roots (an overturned tree is excellent). Study and draw the root system and magnify the root hairs, if present.
3. Adopt a tree in early fall. Watch the leaves fall. Look for winter buds. Notice changes during the winter and early spring. Watch the new leaves and new growth appear as the buds open. (Notice the branch tips are always living). Keep a continuing chart or booklet.

4. Using a special trunk borer (so as not to damage the tree) bore and remove a sample of the interior of the tree's trunk. Notice the different layers and the cambium layer, the only layer inside the trunk that is growing.

5. Find a stump (newly cut, if possible) and count the growth rings to determine age of tree. For fun, each child can pin a little flag on the ring that tells his own age.

6. Cover the trunk with a piece of newsprint and color over it. The growth rings will come out on the paper and this can be used for further study in the classroom.

7. Compare tall and smaller trees for the animal life found in them. List animals observed and record differences (as an example, while a cardinal family may be found in small trees or shrubs, squirrels and grackles nest only at the top of large, tall trees; also less insect life will be evident on smaller trees).

8. Study the leaves that constitute the crown of several broad-leaf trees. Gather specimens and identify according to special characteristics, (example: color, vein pattern, simple or compound, lobed with teeth, etc). Relate to insect homes and eating habits found on special leaves.

Related Activities:

1. Make leaf prints - ink, crayon, carbon paper, soot, spatter, plaster, blue print of light sensitive. (Art, Unit I, Concept A, Activities 3, 8, 21, 9)

2. Make leaf skeletons to study vein structure (boil leaves in one pint water, 4 oz. sodium carbonate and 2 oz. lime of calcium oxide. Afterwards, put on glass plate and run cold water over it (slowly) for a day. Mount between two lantern slides or cellophane.

Concept D

TREES PROVIDE FOOD, SHELTER, AND PROTECTION FOR MANY ANIMALS.

Outdoor Activities:

1. Take a listening trip through the woods. Look for animals and animal homes in or under trees. Listen for bird and other animal sounds.

2. Set up a tree as a learning station. (This station should be well picked according to learning potential.) Take the group to this station in small groups and look for the following:

   a. Lichens and moss
   b. New tree seedlings (identify them and notice location of growth).
   c. Insect on trunk or insect homes at bottom of trunk.
   d. Evidence of woodpeckers.
   e. Birds and bird nests.
   f. Color of trunk.
   g. Insects or eggs found on leaves.
   h. Animal footprints and homes near trunk or in holes in trunk of tree.

3. Visit old stumps, observe plant and animal life found on it. Take notes and identify animals in classroom. Compare with those animals found on living trees. Draw conclusions.

Related Activities:

1. Play bulletin board game - Make a tall tree with various apartment holes or homes. Cut paper animals. Match proper animal with apartment.

2. After visiting station tree, make a game. Draw a map of the tree with different insect, animal, and plant names at bottom. Have children pin names on tree where they remember seeing them.

Concept E

A BIRD"S HABITAT IS THE PLACE IN WHICH IT FINDS THE FOOD, WATER, AND SHELTER IT NEEDS IN ORDER TO LIVE.

Outdoor Activities:

1. Observe the ways that birds get foods. Assign children to watch for methods and procedures used by birds in getting food (use binoculars). Relate to differences in beaks.

2. Make feeding station. Observe and take notes on birds visiting station. Identify birds, noticing their beaks, claws, and flight pattern.

3. Take a field trip to look for bird nests and listen for bird calls. Keep a record of bird nests found, area, and place of nesting.

4. Observe birds in wood, in meadows, and in back yard through binoculars and at close range.

   Look for:
   a. size
   b. color
   c. flight pattern
   d. song or call
   e. nesting site
   f. bill, feet, and feathers.

   Relate habitat to food habits (insects, fruits, seeds, etc.) and protection.

5. Set up bird trap.

Related Activities:

1. Make a flash card game.

2. Make a bird mobile.

3. Make a bird scrapbook.

4. Listen to bird call records.

5. Make an electric quiz in which children can match names of birds with proper pictures of them.

6. Hand out sheet on some bird symbols (example: bluebird is the bird of happiness, etc.) and birds that are national emblems. Stimulate creative writing, possible story on how one of the birds got its symbol.

7. Write to the National Audubon Society, 1130 5th Avenue, New York, New York. (They have a program by which your children can become members of the Junior Audubon Society and receive membership pins, booklets and pictures).

8. Give reports on birds.

9. Make a chart showing different beak, feet and wings.

10. Make a chart showing different bird nests and building materials.

11. List locations of bird nests in trees, shubbery, ground, meadow, woods, and garden.

12. Make a chart of common nesting sites and devise a match game.

Concept F SOME BIRDS MIGRATE

Outdoor Activities:

1. In late Fall and early Spring look for migrating birds. Identify and compare with birds which do not migrate.

2. Make a special compass map designating certain spots in the yard as stopping sites on a bird's migration route. (Refer to Social Studies Unit I, Concept A, Activities 1-5)

Related Activities:

1. Study reason for birds to migrate. Make a chart showing migration routes.

2. Study the principle of flight. Compare the feathers and flight pattern of ground birds with tree birds. Notice shape of tail and wings. Make a comparison chart. Understand and relate flight pattern to feeding habits.

3. Obtain a fallen wing feather and make a sketch of its structure.

Concept G — INSECTS OFTEN SERVE AS FOOD FOR BIRDS

Outdoor Activities:

1. Go on a field trip back to tree and stump stations. Collect and identify insects found there. Bring some specimens back and cage them.

2. Mount insects. Use spreading board and insect mounts to prepare collection for exhibition.

3. Obtain from ecology area insect homes, eggs, cocoons, and galls. Keep eggs, egg cases, cocoons, and galls in classroom and wait for emergence of insects. Identify and observe closely.

4. Study feeding places of butterflies and moths. Relate these to feeding habits of birds.

5. Use binoculars to observe birds feeding. Try to identify insects being eaten. Notice where they were obtained (from ground, off trees, in the air).

6. Build an ant farm.

7. Look for deserted bee, wasp, or hornet nests.

8. Return to ecology area and culminate unit by summarizing plant life found there (including places where there is insect life), and bird life found there (identifying birds, their bahitat, and feeding habits). Relate plant life to animal life.

9. Gather mosquito or other insect eggs from pond. Follow the insects life from egg to adulthood.

Related Activities:

1. Study the insects gathered (try to obtain insects found on trunk of trees, on leaves of tree, and under ground by the tree) and identify body parts. (head, compound eyes, antennae, 6 legs, thorax, abdomen and other specialized features).

2. Hand out study sheets to guide children's observations.

3. Make charts to show where different insects were found and make a guessing game.

4. Magnify and identify the breathing apparatus of insects (spiracle, trachea).

5. Set up insect terrarium showing underground, ground, tree and leaf insects respectively. Attempt to duplicate as nearly as possible the area from which these insects were collected.

6. Make insect flash cards.

7. Discuss the life cycle of insects and make a chart.

8. Discuss and understand pollination. Obtain a flower and rub pollen on fingers.

9. Discuss how some butterflies protect themselves from birds.

10. Make a chart depicting relationship between trees, birds, and insects.

11. Make a chart of harmful and helpful insects and understand how birds help to maintain the balance of nature.

12. Have a group make a compass map of a pretend ant hill. Have the rest of the class follow the map (use front yard).

13. Have small groups make up short skits depicting life as it goes on in the ecology area.

14. Observe, read and report on social insects and their special characteristics.

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TRANSPARENCIES;

Science No. 24-S	Biology - Ecological Aspects
Science No. 23	Identification of Hardwood Trees
Science No. 6-E	The Story of Trees
Science No. 39	Study of Birds

FILMSTRIPS: St Bethlehem School

The Cycle of Nature	Eye Gate
The Balance of Nature	Eye Gate
The Conservation of our Forests-Trees (The Wonder of Nature Series)	Eye Gate
Audubon's Birds of Forest and Woodland Birds and Their Songs	Encyclopedia Films, Inc.
Audubon's Birds of America	Encyclopedia Britannica
What is a Bird	Benefic
Observing Birds in Nature	Encyclopedia Britannica
Discovering Birds	Encyclopedia Britannica
Looking at Birds	Society For Visual Education
Feathers and Flight of Birds	Society For Visual Education
Migration of Birds	Society For Visual Education
Insects: What They Are	Encyclopedia Britannica
Ecology Series: The Physical Environment	McGraw-Hill
Ecology Series: The Ecological Succession	McGraw-Hill

Ecology Series: The Field as a Community	McGraw Hill
Ecology and Man Series: Introduction to Ecology	McGraw-Hill
Ecology and Man Series: Changes in Ecosystems	McGraw-Hill
Ecology and Man Series: Habitats and Niches	McGraw-Hill
Bird Study: Beaks and Feet of Birds	Society for Visual Education
Conservation for Today's America Soil Conservation Today	Society for Visual Education
Birds and Their Songs Part I - Larger Birds of Fields and Gardens Part 2 - Smaller Birds of Woods and Gardens Part 3 - Birds of Open Fields and Meadows Part 4 - Birds of Rivers, Marshes, and Seashores	Museum Extension Service
Insects: Their Life Cycle	Encyclopedia Britannica
Helpful and Harmful Insects	Encyclopedia Britannica
Social Insects	Encyclopedia Britannica
Some Different Kinds of Insects	Encyclopedia Britannica
The Ant: A Social Insect	Popular Science

FILM LOOPS:

Birds Building Nests	Walt Disney
Birds Feeding Their Young	Walt Disney
American Migrating Birds	Walt Disney
Courting Rituals of Birds	Walt Disney
Bird Tricks for Survival	Walt Disney
Queen Bee Laying Eggs	Walt Disney
Swarm of Bees	Walt Disney
Queen Bee Dual	Walt Disney
Raising a Queen Bee	Walt Disney
Ants Tunnel Building	Walt Disney
Ant Hill Protection (Part 1)	Walt Disney
Ant Hill Protection (Part 2)	Walt Disney
Leaf Cutting Ants	Walt Disney
Centipedes, Millipedes, Scorpions	Walt Disney
Artic Birds	Walt Disney
Flightless Birds	Walt Disney

Water Birds Gathering Birds (Part 1)	Walt Disney
Water Birds Gathering Birds (Part 2)	Walt Disney
Eagle	Walt Disney
Osprey - Birds of Prey	Walt Disney
Seed Dispersal	Walt Disney
Self Planting Seeds	Walt Disney
Seeds Sprouting	Walt Disney
Carnivorous Plants	Walt Disney
Growth and Pollination of Corn	Walt Disney
Fruit Ripening	Walt Disney
Climbing Vines	Walt Disney
Desert Plants	Walt Disney
Desert Flowers	Walt Disney
Flowers Opening	Walt Disney
Mushrooms	Walt Disney

RECORDS:

Spring Morning	Droll Yankees
Songs of the Forest	Droll Yankees
Birds on a May Morning	Droll Yankees
The Songs of Insects	Houghton Mifflin Co.
Voices of the Night	Houghton Mifflin Co.

Unit II - Forest Conservation

Concept A TREES PROVIDE MANY OF OUR NEEDS

Outdoor Activities:

1. Beginning with objects in the classroom and extending to those outside, observe and list all objects made from trees.
2. Visit a freshly cut stump. Point out and mark the different layers of the tree (bark, cambium layer, lapwood, heartwood). Discuss the purposes of each layer.
3. Study the main parts of a tree - roots, trunk, and crown, by using the trees in or near the school yard.

Related Activities:

1. Visit a paper mill and study paper products.
2. Make charts showing products of the trees and the parts from which these were made.
3. Make diorama depicting forest life, with the tree as the center.
4. Visit a saw mill.

Concept B A FOREST IS A COMMUNITY OF PLANTS AND ANIMALS

Outdoor Activities:

1. Visit a tree park, a forest, or a wooded area and observe the animals and plants found there. Keep a list and share observations.

2. Choose one tree as a study station. Study closely plant life on or near it (seedlings, lichen, moss, creepers, vines, flowers, plants) and animal life living on or near it (moths, caterpillars, ants, birds, chipmunks, squirrels, beetles, insects and earthworms). Name other larger animals that may not be in evidence, but whose homes may be nearby (groundhogs, skunks, opposums and foxes).

3. Spread sample of the forest floor on white paper. Examine it for living organisms. Many will be miscroscopic, so prepare some slides to be shown under bioscope later. Notice humus.

Related Activities:

1. Draw pictures of microscopic organisms in humus.

2. Alphabet game - "I'm thinking of an animal or a plant I saw today that begins with the letter A, B, C, D, etc".

Concept C

FORESTS BUILD AND HOLD SOIL

Outdoor Activities:

1. Study examples of soil erosion near the school yard.

2. Choose a group of trees. Feel the soil under them. Notice how loose and dark it usually is due to decaying leaves and other materials.

3. Set up two coffee cans (open at both ends). Place one in a hard-packed area and the other in a soft, carpeted area. Put the cans into the ground about two inches. Pour water into each until it reaches the top of the can. Time the rate at which each one absorbs the water. Compare and discuss.

4. Cut a square foot of sod and imagine each blade of grass as a forest tree. Plant it in a bare place and watch the absorption during or after a storm, as compared to the bare area around it.

5. Study seed dispersal. Find a large tree; notice seedlings of the same kind within the area. Chart findings.

6. Go into forest and notice leaf coverage on the ground. Dig to the bottom and notice differences between top and bottom layer. Note decaying plant material and building up of the soil.

Concept D FORESTS HELP PROTECT WATER-SHEDS AND REGULATE STREAMFLOW

Outdoor Activities:

1. After a hard rain observe the run-off from a steep hill covered with timber and the run-off from a cultivated field with the same degree of slope. Check depth that the moisture penetrates on the two areas by digging a section from each area.

2. In a period of dry weather compare soil samples from a woodland with samples from a cultivated field. Squeeze a handful of both soils.

3. Make arrangements with school administrator to plant small pine trees or grass on an eroded area. Check dams should also be built where needed.

4. Take a field trip to two different streams - one surrounded by trees and the other surrounded by cultivated fields. Compare the differences in color, amount of sediment.

Concept E

FORESTS HAVE MANY ENEMIES: INSECTS, DISEASES, FIRES, ANIMALS AND MAN

Outdoor Activities:

1. Collect specimens of diseased or insect damaged twigs and leaves. Consult forester for help and information.

2. Take a field trip to an area where you can see the results of damage from fire.

Related Activities:

1. Invite a forester to visit your class to discuss forest fire prevention, disease and insect control.

2. Discuss ways of helping our forests.

Concept F

TREES ARE A CROP THAT SHOULD BE MANAGED

Outdoor Activities:

1. Take a field trip to locate and observe a tree that has reached full maturity and is beginning to deteriorate or has deteriorated. Notice decay. Notice effect on surrounding trees.

2. Visit an area that has been lumbered. Observe if young trees have been left and if seedlings have been protected.

3. In a local area, find trees in which man has controlled disease or insect damage. Visit it for a thorough study.

4. Visit a nursery. Notice procedures taken in caring for the trees.

5. Visit a planted forest.

6. Visit a managed forest.

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TRANSPARENCY:

Conservation Group No. 1-5

FILMSTRIPS: St. Bethlehem School

The Interdependence of Nature

Conservation of our Resources (A-1)

CHARTS:

How to Make Most Use of a Log	St. Regis Paper Company
The Trunk of a Tree	St. Regis Paper Company
Which Wood is Best for What - And Why	St. Regis Paper Company

OTHER MATERIAL:

Cross Section of a Trunk
Game - Ranger Rick and the Great Forest Fire

Unit III - Weather

Concept A

WEATHER AFFECTS THE LIFE, GROWTH, AND DEVELOPMENT OF ALL LIVING THINGS

Outdoor Activities:

1. Explore little climates (differences in temperature in different places on the school yard). Compare the temperatures on North and South side of a small hill. Relate to plant and animal life found in each area. Also compare the temperature of windy and calm areas, and deep and shallow water, snow and ice or of surface soil and subsoil.

2. Twice daily take a temperature reading outside (in the early morning and in the late afternoon). Record temperatures on a graph.

3. See the effect of heavy rain on soil erosion. Take a field trip in local area (walking) after a heavy shower - observe effects on bare surfaces (notice lack of animal and plant life in these areas of erosion) (Refer to Science Unit II, Concept C, Activities 1-6).

Related Activities:

1. Set up plant experiments in the classroom to study micro climates (grow two plants of same species on opposite side of classroom - one in shade, one in sun). Observe growth. Measure difference between soil temperature twice a day.

2. Appoint a child to bring in the daily forecast everyday or two, tape the recorded forecast given over the phone and play back to class.

3. Bring in weather instruments and discuss their purpose.

4. Make up a card game (The Old Weatherman) based on card game Old Maid (using vocabulary words relating to weather).

Concept B CLOUDS HELP IN PREDICTING THE WEATHER

Outdoor Activities:

1. Have children keep records for several days of the kinds of clouds that are visible. Have them identify and help them learn what each type means.

2. During a thunderstorm, gather at a protected area and observe closely not only the lightning but the movement, height, color, and type of clouds.

3. On clear, bright day when cumulus clouds are present, take groups of children out to sketch forms, faces, body shapes they see in the clouds. Have them share these sketches and perhaps initiate a skit.

Related Activities:

1. Make a chart showing different cloud types. Make up a matching game.

2. Use a transparency of different clouds. Hand out cotton puffs and blue, purple, and gray construction paper. Divide class into cloud types and have them make the cloud type that they have been assigned. Display and use to stimulate creative writing.

3. Use transparencies to explain the principle behind thunder and lightning.

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FILMSTRIPS: St. Bethlehem School

Our Weather	Encyclopedia Britannica
The Air	Encyclopedia Britannica
The Four Seasons	Eye Gate
The Cycle of Nature	Eye Gate
The Balance of Nature	Eye Gate
It's All Weather	Eye Gate
Air, Wind and Weather	Eye Gate

TRANSPARENCY:

Earth Science Weather

Unit IV - The Earth and It's History

Concept A

THE EARTH IS COMPOSED OF THREE LAYERS THE CRUST, MANTLE AND CORE

Outdoor Activity:

1. Mix mud with water and sugar and/or sand until mixture is thick but moist enough to be manageable. Shape into balls or spheres and cut out a moveable section. Let dry and then paint layers representing crust, mantle and core.

Related Activity:

1. Make pictures with labels of the three layers.

Concept B

ROCK FORMATIONS ARE OFTEN FORMED IN LAYERS UNDER WATER

Outdoor Activities:

1. Have each child bring in a jar. Gather sand, dirt, and gravel. Pour into jar of water, shake, and let settle into layers. Have them keep these and refer to them periodically throughout the year for increased hardness.

2. Take a field trip to observe huge layers of exposed rock.

Concept C

THERE ARE THREE GROUPS OF ROCKS IGNEOUS, SEDIMENTARY AND METAMORPHIC

Outdoor Activities:

1. Collect various rock samples during field trips. Classify accroding to size, color, and materials. Identify.
2. Rub two rocks together to see which makes a scratch on the other (testing for hardness can also be used with a chart and tools - penny, fingernail, or nail).
3. Test for limestone - vinegar, lemon juice, or diluted hydrochloric acid, applied to rock through an eye dropper. (Bubbling on the surface of the rock should occur, if limestone is present).
4. Guessing game: Collect rocks around school yard and study closely. Blindfold each child and give each a rock. Have each child describe the rock and try to guess which rock it is.
5. Examine a rock with a hand lens to see the size of particles.
6. Find rocks that show signs of rusting. (oxidation)
7. Look for rocks in or around creeks that have been smoothed or rounded by the action of water.

Related Activities:

1. Use tumbled rocks to make key rings, jewelry or mobiles. (Art Unit I, Concept A, Activities 14, 15, 16).
2. Use different kinds of rock to "paint" pictures on sand paper.
3. Play game - animal, vegetable or mineral (twenty questions).
4. Shake rocks in a jar of water to show what rocks go through while traveling down a river.

Concept D MINERALS CAN BE BOTH ORNAMENTAL AND USEFUL

Outdoor Activities:

1. Investigate minerals in the soil by pouring a mixture of soil and water through a filter. Put water aside in a glass pie pan. Look at it when the water evaporates or has been boiled away.

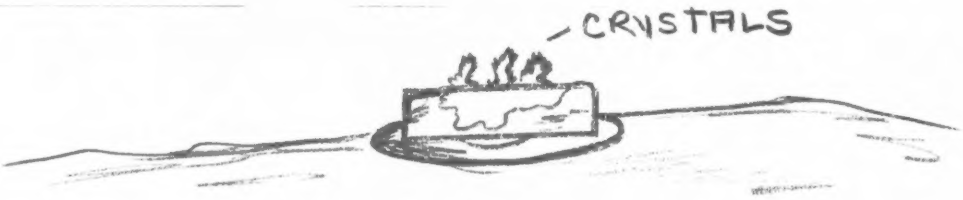
2. Collect and identify common minerals such as talc or quartz.

Related Activities:

1. Make crystals. Put water in glass and pour in salt. Tie a string to the middle of a pencil and lay pencil across the top of the glass with string extended down into water. Using food coloring will make crystals more apparent.

2. Follow above directions, substituting brown sugar for salt. Results will be rock candy.

3. Make crystal gardens: Place a brick on small dish. Combine 4 tablespoons water, one tablespoon household ammonia, bluing, noniodized salt. Pour mixture over brick. Add food coloring and watch crystals grow.



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The Story of Mountains	Encyclopedia Britannica
The Story of Volcanoes	Encyclopedia Britannica
The Earth is Always Changing	Eye Gate
The Story of Ice and Glaciers	Encyclopedia Britannica
Common Minerals	Society for Visual Education
The Earth's Crust	Society for Visual Education
Earth, A Great Storehouse	Society for Visual Education

TRANSPARENCIES:

Science No. 37 - Rocks and Minerals
Science No. 36 - Geologic Functions

OTHER MATERIALS:

Tools chipping set
Display box of common minerals of Tennessee
Washington Collection of rocks and minerals
Gem stone identification chart
Geology demonstration kit (volcano)

Unit V - Prehistoric Plants and Animals

Concept A FOSSILS ARE REMAINS OF PLANTS AND ANIMALS THAT LIVED LONG AGO

Outdoor Activities:

1. Explore for and gather rocks containing fossils.
2. Identify fossils.

Related Activities:

1. Gather shells, flat rocks, leaves. Coat shell, rock or leaf with vaseline, put in the bottom of an empty pint milk carton. Mix plaster of paris and water (to make a soft paste) and pour into carton over object and let harden. When hard, peel carton off and loosen object. This helps to give children an idea of how fossils were formed.

2. Make papermache dinosaurs.

3. Make up words to a well known tune to explain in song form the life of the cavemen.

4. Play "Nature's Secret" - Children gather or make an object characteristic of a time era. A child puts object behind back, stands up in front of the room and gives three hints. The children try to guess what the object is.

5. Make weapons, instruments, and weave mats to typify utensils made by cavemen (sticks, twine, stones, arrowheads, and broom sage). (Art, Unit I, Concept A, Activity 20) (Music Unit I, Concept A, Activity 2)

6. Using a bioscope, show prepared slides of one-celled plants and animals. This typifies life of the precambrian era.

7. Put pieces of wood into a test tube and burn until carbon forms. This shows one way plants decompose into carbon.

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The Story Fossils Tell	Encyclopedia Britannica
Prehistoric Life	Encyclopedia Britannica
Rise of the Dinosaurs	Encyclopedia Britannica
Triumph of the Dinosaurs	Encyclopedia Britannica
Discovering Fossils	Encyclopedia Britannica

Unit VI - Materials of the Earth

Concept A MATTER EXISTS IN THREE STATES - SOLIDS, LIQUIDS AND GASES

Outdoor Activity:

1. Go outside to identify the three different stages of matter around you.

Concept B MATTER MAY BE IDENTIFIED BY CERTAIN PHYSICAL PROPERTIES

Outdoor Activity:

1. Go on organized field trips and have children participate in feeling objects, manipulating objects, smelling and even tasting some objects.

Concept C MATTER CAN BE CHANGED INTO DIFFERENT STATES

Outdoor Activity:

1. On a snowy day, collect some snow in a pan and let it set outside until it melts. This shows how a solid has become a liquid. Measure the difference between the level of the snow in the pan and the level of the water after the snow has melted. Then place melted liquid in a warm sunny spot for several days. Measure the amount of evaporation. This changes a liquid to a gas.

Related Activity:

1. The same activity may be done with ice cubes inside. (Boiling the water speeds up the demonstration.)

Concept D AS CHEMICAL CHANGES TAKE PLACE, NEW SUBSTANCES ARE FORMED

Outdoor Activities:

1. Place nail outside and watch it rust or oxidize. (In time, outside of nail becomes iron oxide.)
2. Burn a pile of dry leaves and watch chemical change. (Vegetable matter changes to carbon and organic ash.)

Related Activity:

1. Burn a candle and let carbon residue gather on the side of a cup or piece of glass held over the candle. Mix iron filings with sulphur. A magnet will pick up the iron filings. Mix and heat iron filings and sulphur. The magnet will not pick up this new substance.

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FILMSTRIPS: St. Bethlehem School

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Chemical Change	Encyclopedia Britannica
The Air	Encyclopedia Britannica
What Things Are Made of	Society for Visual Education
Chemical Changes	Society for Visual Education
Atoms and Molecules	Society for Visual Education

Unit VII - Energy To Do Work

Concept A — WORK IS DONE WHEN AN OBJECT IS MOVED

Outdoor Activity:

1. Push hard against a tree (no work is done), then push a small cart for a distance (work is done).

Concept B — THE FORCE THAT PULLS OBJECTS TO THE EARTH IS CALLED GRAVITY

Outdoor Activities:

1. On appreciation fieldtrip, help children to see the importance of gravity in keeping the balance of nature. Seeds drop to the ground in order to take root and grow new plants. Rain falls, bringing life to plants and animals. Animals that live on the surface of the ground may obtain their food supply from falling objects such as seed, nuts and fruit. Leaves and dead branches that drop from trees decay and enrich the soil for plant life.
2. Take a field trip to observe animals in nature and the effect of gravity on them. For instance, frogs have large and strong hind legs to help them jump against gravity's force; and the wings of birds must be both strong and light to overcome gravity.

Related Activity:

1. Weigh each child. Divide weight by 6 to determine weight on moon.

Concept C

THERE ARE TWO KINDS OF ENERGY - KINETIC AND POTENTIAL

Outdoor Activity:

1. Take a field trip to a dam to observe potential energy, water supply behind the dam and kinetic energy water falling.

Related Activity:

1. Make a model water wheel dam and put in near-by stream to observe. (Make from cardboard, toothpicks and thread).

Concept D

THERE ARE DIFFERENT FORMS OF ENERGY

Outdoor Activities:

1. Go outside and notice the light and heat energy from the sun.

2. Appreciation field trip. Listen for sounds, look for moving objects (mechanical energy), feel heat energy.

Related Activities:

1. A skit performed outside or inside could be devised with the children representing different forms of energy. Costumes and songs may be made up to accompany it.

2. Guessing quiz: Illustrate or make objects related to different forms of energy. Try to guess which energy form it belongs to.

3. Make models of simple machines: inclined plane, wheel and axle, pulley and lever. These can be made from simple, inexpensive materials.

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FILMSTRIPS: St Bethlehem School

Sound
Light
Machines
Electricity

Unit VIII - Living In Space

Concept A

THE COLOR OF AN OBJECT AFFECTS ITS ABILITY TO ABSORB OR REFLECT HEAT FROM THE SUN

Outdoor Activity:

1. Use soil thermometers to take the temperature of different textures of soil. (dark loam, red clay, sandy) Compare. Discuss how color affects temperature.

Related Activity:

1. Place a thermometer in two shoe boxes. Cover one with a white cloth, one with a black cloth. Place outside in the sun above the ground for a few hours. Compare the temperatures of the two boxes.

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Unit I - Map Skills

Concept A

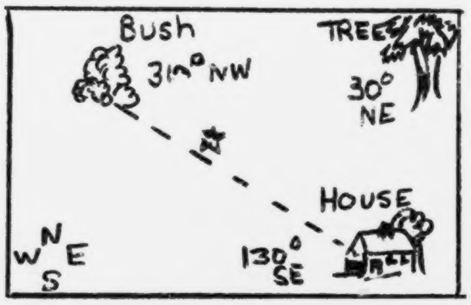
KNOWLEDGE AND USE OF THE COMPASS LAYS A FIRM FOUNDATION FOR BASIC MAP READING SKILLS AND UNDERSTANDINGS

Outdoor Activities:

1. Learn parts of a compass: degrees, magnetic needle, housing, base, direction of travel arrow.

2. Play game to aid in understanding compass points: Participants line up, arm length apart, Locate North with a tree or other land mark. On signal "Northeast, Go!" all turn to what they believe to be Northeast; then on command, "Freeze", stand motionless. Those who are facing correctly go out of game to do independent practice. Others continue game to get more training.

3. Use compass. Each team should start at a given point and determine from there the degree readings of school yard landmarks. They may wish to record this on simple map.



4. Orienting map walk. To "orient" a map means to turn it so that North on map fits the actual landmark at which he is standing. He may wish to do this more than once, using more advanced maps each trip. (see page 45, Be An Expert With Map and Compass for picture).

5. Take a map point walk. On a simple map, lay out an appropriate route leading through easily definable landmarks. Mark the route by crepe paper streamers so each marker can be seen from preceeding one. Place a north pointing arrow marker at each landmark to assist children in orienting their maps. The object is to follow the marked route and indicate on the map, by circling each of the landmarks. A judge at each landmark could help those who need it. (see page 49, Be Expert With Map and Compass, for illustration).

6. Make secret individual compass maps, exchange and follow directions.

Related Activities:

1. Explain sixteen compass directions and degree readings on board. Pass out mimeograph sheet with compass points left blank for children to fill in.

2. Make maps of own neighborhood. Pace off street and make scale, as well as use map symbols for houses, trees, etc.

3. Pace off classroom to learn concepts of scale. (examples: 1" equals 1 cinder block on wall, 1" equals 1 tile on floor, 1 hand equals 1 foot).

4. To understand use of degrees on maps and globes, note degrees in a circle as marked on compass and observe globes and flat maps. Construct a globe with paper-mache and mark off meridians and parallels by degrees (Art, Unit I, Concept A, Related Activity1).

5. To relate longitudinal degrees with our time system, have an explanation period followed by game. Pin cut out dolls (representing children) at determined meridians, 15 degrees apart, on a flat map of the world. Designate a time for 0 degrees longitude. Ask each child in turn what time it would be on his meridian. This idea can be used with globe models make in number 2, above.

6. Obtain for bulletin board a flat map of the world or the united States showing grid lines. Find approximate longitude and latitude of important cities.

7. Find map directions with paper circle showing sixteen compass directions and degree readings. Spread map in front of you. Decide on some specific spot on a meridian line as "base of operations" for practice in determining directions. North will be up from that spot, South will be down, East right, West left. Take an imaginary trip from "base of operation" to a given town or landmark. Object: What is the approximate degree reading and direction of travel from base to destination? Or what towns lie 180 degrees South, 270 degrees West, etc? (Map may be fictitious. Preliminary to use of protractor in math.)

Concept B THE WORLD IS DIVIDED INTO LARGE LAND AND WATER MASSES WITH GREAT VARIATIONS IN ELEVATION AND FORM.

Outdoor Activities:

1. Take a field trip to observe different bodies of water and land forms:

a.	pond	d.	canyon
b.	brook	e.	plateau
c.	river	f.	delta

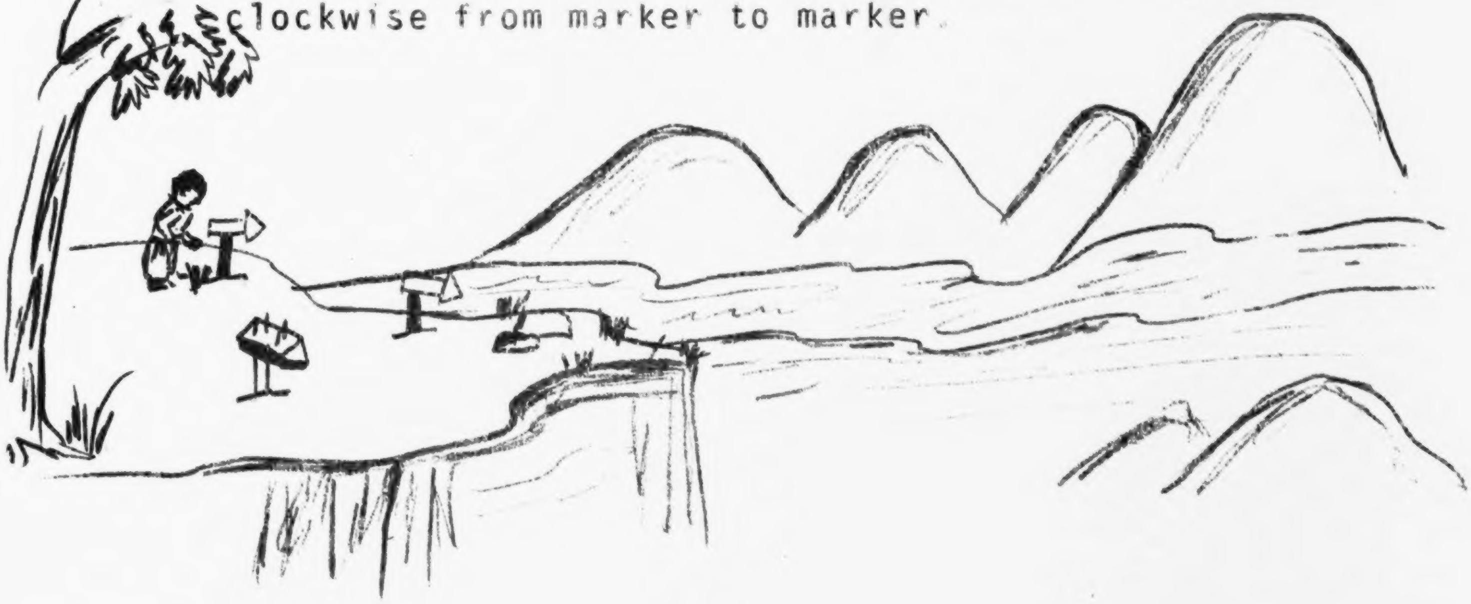
2. Land mark hunt: Bring group to a high point of good visibility where they can see a number of different landmarks. Provide each child or team with topographic map of the area and a pencil. Directions:

   a. Indicate on your map, by drawing a circle around it, the point where you are now standing.

   b. Circle church approximately Northwest of here.

   c. Circle crossroads approximately South of here. (Set a certain time for finishing the project. Score points for each landmark found correctly).

   Note: Instead of using a list of landmarks, and to add interest, put up a number of markers in a circle, each marker pointing to a different landmark. These markers may be made of strips of wood 1" x 2" x 10", with nails to act as sights at eye level. One end of each marker is pointed. The other carries a strip of cardboard with a description of landmards such as: "Church". Players move clockwise from marker to marker.



Related Activities:

1. Simple demonstration of contour lines. Dip rock part way in water, draw line, dip one inch deeper, draw another line and so on. View from above.
2. Use land form models, plastic relief models and map reading project maps to teach and reinforce topograpical concepts.
3. Make relief and products map using salt (1 part), flour (2 parts), and food coloring mixed with water to a clay consistency.
4. Invite world travelers and local geographers to speak to students.

Concept C

MANY SKILLS ARE INVOLVED IN USING, MAKING AND READING MAPS

Outdoor Activities:

1. To determine distance by measurement and gain some proficiency in judging distances through visual perception, measure off and mark with flags; 100 feet, 200 feet, etc. (Have children recall that a mile is 5,280 feet). After some practice with this, have a contest on "distance judgment" with premeasured stakes or landmarks.

2. Pacing: Determine (by individuals) the length of each child's pace (double step). Mark off a hundred foot distance. Have each child walk this counting his own steps. Then divide number of steps into 100 to determine length of child's step. (example: If he took 50 steps to walk 100 feet, then each step is equal to 2 feet.)

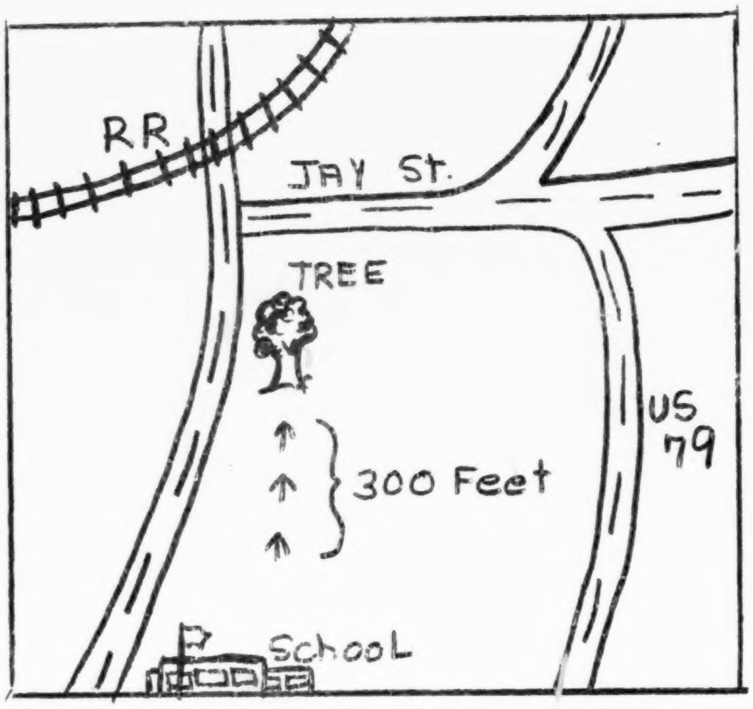
    a. Make a simple scale map using paces for measurement.

    b. Estimate a distance by visual perception and then pace it off for more accurate "guess", then measure with tape.

Related Activities:

1. Draw a simple map of the school, or school site following teacher's direction. Teach symbols or have children make their own for whatever they wish to include on map.

2. Find the scale for a map. Get a local map of a small area as possible for each child. (made by teacher possibly). Using a pedometer or tape walk from one landmark shown on map to another. (This should be done in advance by teacher so figure is predetermined. Using this measurement, make a scale in inches at bottom of given map.



Arrows show trail measured by children

300 Feet = 1 Inch or Designated Area

3. Bring out types of map projections and distortions. Use orange peel to illustrate globe shell flattened. (*World Book Encyclopedia*, Volumn M has good lesson plan on this.)

4. Map individual school bus routes being sure to include prominent landmarks. Combine maps to make a large collective map.

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FILMSTRIPS: St Bethlehem School

Finding out About Day and Night	Society for Visual Education
Learning to Use Maps	Encyclopedia Britannica
Maps and How to Use Them	Eye Gate

TRANSPARENCIES:

The Earth - Science No. 25
A History of Measurement, Science No. 20
General Science - Science No. 4 HE, S
Magnetism and Electromagnetism - Science No. 34
Geologic Functions - Science No. 36

Unit II - Land of High Mountains

Concept A

IN THE MOUNTAINS, HAY CANNOT BE CURED ON THE GROUND BECAUSE OF HEAVY DEW, BUT MUST BE HUNG ON FENCES, ROCKS, OR SHRUBS TO CURE

Outdoor Activity:

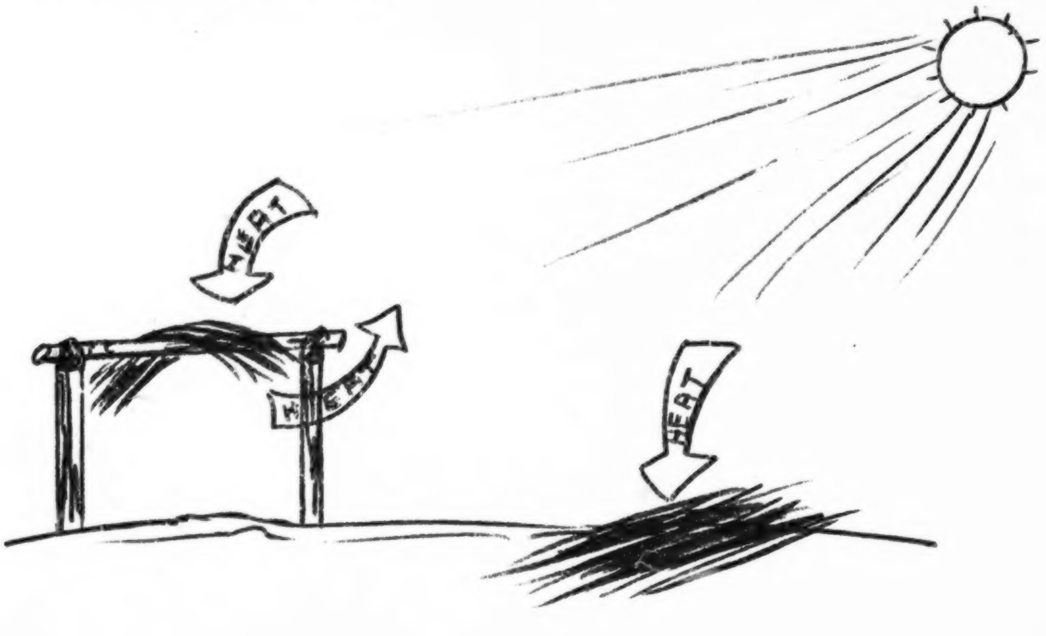
1. Build racks with sticks and twine. Hang cut grass up to dry. Compare length of time it takes grass to dry on racks and on the ground.

Concept B

MOUNTAINOUS COUNTRIES HAVE GREAT VARIATION IN TEMPERATURE, DEPENDING ON ALTITUDE

Outdoor Activity:

1. Experiment with micro-climates; Take temperature at bottom, middle, and top of a hill, and compare findings. (Science Unit III, Concept A, Activity 1)



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FILMSTRIPS:

Children of Switzerland	Encyclopedia Britannica

Unit III - Lowlands of Holland

Concept A

THE LAND IN HOLLAND (NETHERLANDS) IS MOSTLY BELOW SEA LEVEL, AND RECLAIMED LAND MUST BE DESALINATED FOR TWO OR THREE YEARS BEFORE IT BECOMES USEFUL.

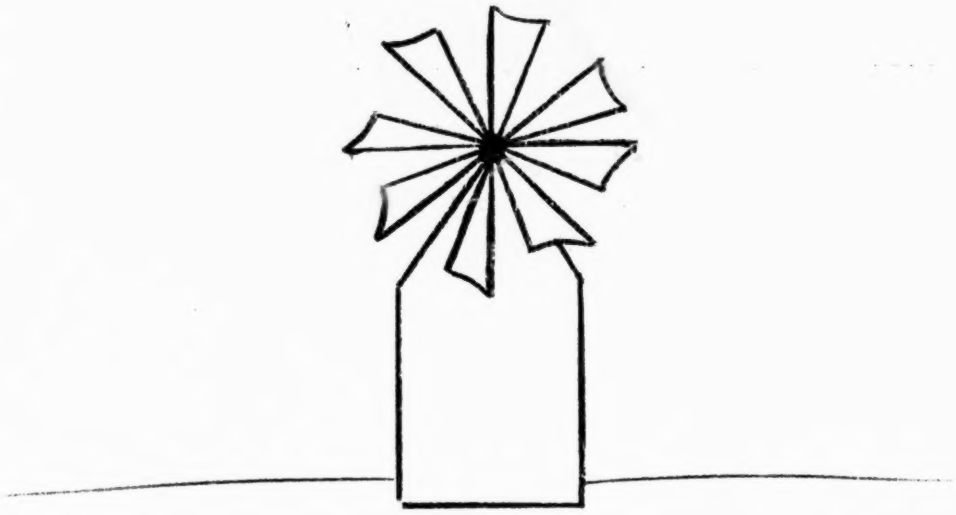
Outdoor Activities:

1. On school grounds build an elementary system of dikes and bolders. Make sure land between dikes is lower than water. Place a stick figure on land and a paper ship on water to illustrate how a spectator standing by the Zuider Zee would view ships floating above eye level.

2. Flood a square yard of land at beginning of unit, and salt it. Let set for a week or two. Drain water out (relate to pumping of windmill). Try to grow grass in this area. Plant similar seeds in unsalted area nearby. Compare.

Related Activity:

1. Construct a windmill out of cardboard boxes and poster board.



Concept B

HOLLAND IS THE WORLD LEADER IN GROWING AND DEVELOPMENT OF FLOWER BULBS.

Outdoor Activity:

1. Plant tulip bulbs on the school grounds in October or November. Dig some bulbs later and study their structure. Let the others bloom.

Related Activities:

1. Grow an onion in water in the classroom. Compare with a tulip bulb.

2. Have children write the Embassy of Holland for information on land reclamation and bulb growing.

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FILMSTRIP: St. Bethlehem School

Children of Holland

Unit IV - Life In The Cold Regions

Concept A

PEOPLE OF COLD REGIONS PROVIDE FOR THEIR BASIC NEEDS FOR FOOD, CLOTHING AND SHELTER BY USING MATERIALS AVAILABLE IN THEIR AREA.

Outdoor Activities:

1. Build an igloo actually using snow, if available.
2. Go on a field trip to a frozen pond to demonstrate climatic conditions in cold lands. Notice state of plant life.

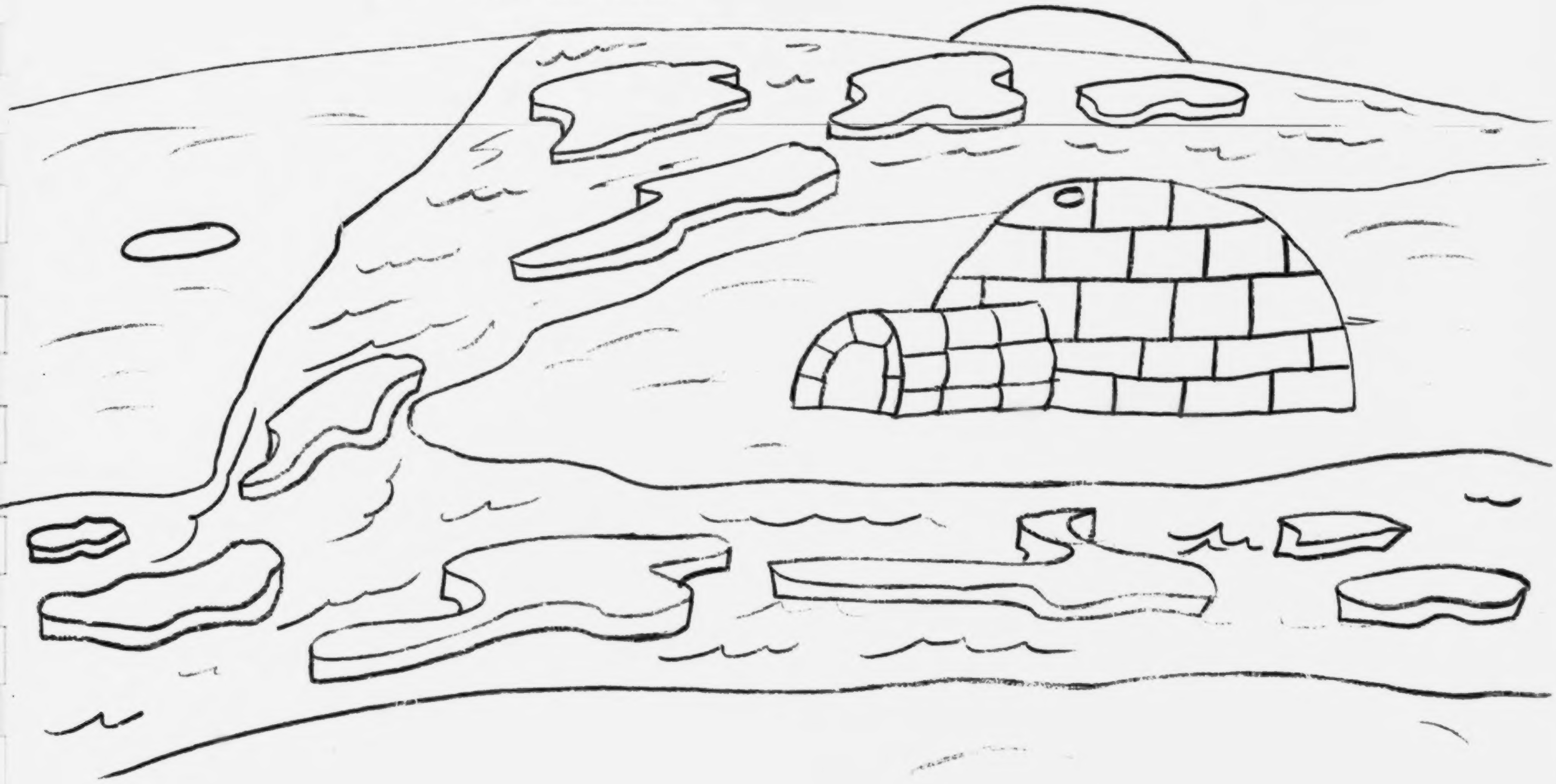
Related Activities:

1. On individual maps of the world, locate and color the cold regions, showing water and land areas. Color appropriately the highlands, mountains, lowlands, etc.
2. Build igloos out of styrofoam, clay or sugar cubes glued together.
3. Use bars of soap and scissors to carve different objects related to the unit (kayaks, walrus heads, igloos, little animals).
4. Make weapons used by Eskimo hunters - harpoons. (Art, Unit I, Concept A, Activity 20).
5. Play Eskimo games, making materials for playing them. (Refer to Encyclopedia, Volumn E) Learn native songs and dances.
6. Bring in a resource person to talk to the children.
7. Write and produce a simple play about such topics as: "Preparing for and going on an Arctic bear hunt". "Home after a day of fishing".

8. Have panel discussions: (Differences between life in the hot and cold countries).

9. Discuss how long hours of sunlight and rich soil make for a season of very rapid growth during their short summer.

10. Write to Embassies of countries located in polar regions and to Department of Interior, Juneau, Alaska, for information.



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Marine Mammals of the Northland	Encyclopedia Britannica
Eskimo Family	Encyclopedia Britannica
Eskimo Children	Encyclopedia Britannica
Animal Adventures in Lands of Ice and Snow	Encyclopedia Britannica

RECORD:

Eskimos of Hudson Bay and Alaska

TRANSPARENCIES:

Anthropology Nos. 5-H, 5-C, 5-I, 6-G, 6-S

Unit V - Hot, Wet Regions

Concept A

HOT, WET CLIMATES PRODUCE RAPID GROWTH OF VEGETATION

Outdoor Activity:

1. During a period of warm, wet weather place a ruler by a chosen plant. Visit it periodically and chart growth. Compare with dry season.

Related Activity:

1. Partly fill a gallon jar with soil. Plant seed or set in growing plants. Close jar and notice humidity that develops inside jar.

Concept B

PEOPLE IN HOT CLIMATES NEED LITTLE SHELTER OR CLOTHING, AND USE MATERIALS AT HAND FOR CONSTRUCTING HOMES AND MAKING CLOTHING.

Outdoor Activities:

1. Look for material that could be used for making breech cloths.
2. Dye yarn for weaving cloth. Use natural dyes. (Art, Unit I Concept A, Activity 18).
3. Weave a mat from straw or strips of bark.
4. Have a ceremony, weave grass skirts and head-dresses out of broomsage and string. Emphasize role of men (Art, Unit I, Concept A, Activity 19)

Related Activity:

1. Build a thatched hut, using broomsage and other native materials.

Concept C
TOOLS AND WEAPONS ARE SIMPLY CONSTRUCTED OF MATERIALS EASILY FOUND IN THEIR ENVIRONMENTS

Outdoor Activity:

1. Make blow guns, spears, bow and arrows. (Art, Unit I, Concept A, Activity 20).

Concept D
RUBBER IS A NATURAL PRODUCT IN HOT, WET LANDS

Outdoor Activity:

1. Have children examine dandelion, milkweed, or goldenrod for latex. Let drops of the liquid dry on the hand and see the sticky substance produced. When dry, this can be rolled into a tiny ball like rubber.

Related Activities:

1. Use maps and globes to locate hot, wet lands.
2. Make a diorama of jungle life, make animals from clay and use vegetation gathered outdoors.
3. Learn dance rhythms used by natives of equatorial lands. (Music Unit I, Concept A, Activity 1).
4. Have recource person speak to class.
5. Collect and display objects from hot, wet lands. (Brazil nuts, tapioca, cocoa, coffee beans, fruit, etc.)
6. Make tapioca pudding and a pineapple fruit juice for a class party.

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Forests of Tropical America	Encyclopedia Britannica
Family of Brazil	Encyclopedia Britannica

TRANSPARENCY:

The Story of Rubber - No. 31 E

RECORDS:

Re 83 - Latin American Folk Songs

Unit VI - Hot, Dry Lands

Concept A

HOT, DRY LANDS ARE REGIONS OF LITTLE RAIN, FEW STREAMS, DRY SOIL, DRY AIR, AND MUCH SUNSHINE

Outdoor Activities:

1. Gather soil and combine with sand. Let bake in sun. Notice cracked, dry surface (relate to effect of sun and heat on land). Then pour water over it or set out in rain - notice soil erosion.
2. Study the local water supply. (This could include cisterns, springs, and wells).
3. Dig in soil and see how far you have to dig to find moisture. Help children to realize that, in the desert, you can seldom reach wet soil.
4. Find a small ravine or dry river bed. Gather materials found in river bed and notice round pebbles. To demonstrate effect of cloud-burst on dry, river bed - pour 2 or 3 buckets of water at the same time down a small bare crack or crevice in soil on school yard. Notice flood and head waters. Do the same demonstration on sod and compare the difference.

Concept B

PLANT LIFE AND ANIMAL LIFE ON THE DESERT ARE VERY SCARCE

Outdoor Activity:

1. Find bare, rocky and sandy area (only a square yard is necessary) on the school yard. Let children observe area and look for signs of life. Exaggerate area into acres (in children's imagination) and relate to scarcity of plant life in desert. Compare these areas with a richly planted square yard. Record differences in plant life, animal life, erosion.

Related Activities:

1. Build a desert Terrarium.

2. Gather sandy, dry soil. Plant a variety of plants in it. Do not water. Observe those which do not survive and those that do. (Make sure one plant is corn, another is squash).

3. Visit a corn field and compare to American Desert.

4. Visit a farm using irrigating practices. Use model of Irrigation ditches or irrigation pipes.

Concept C

PEOPLE LIVING IN THE DESERT MUST HAVE SHELTER WHICH PROTECTS THEM FROM GREAT EXTREMES OF TEMPERATURE

Outdoor Activity:

1. Using a soil thermometer take the temperature of a sandy, bare area. Compare this with soil temperature of a well-sodded area. Relate to need of shelter in the desert.

Related Activities:

1. Build a hogan or a typical Navajo Settlement using sticks and natural mud.

2. Make open front tents like those found in the Saharra. (Sticks and cloth).

3. Experiment with white clothing and dark clothing to determine heat absorbtion of each.

4. Make crossword puzzles in shapes of camels, sheep, or tents and hogans.

5. Prepare T.V. program on "Life in the Desert".

6. Read "And Now Miguel".

7. Make Navajo Jewelry - using scrap jewelry, tinfoil, turquoise poster board, and maccaroni.

8. Make collage out of corn kernals, squash seeds, wool, tinfoil, turquoise poster board, etc. (related to materials found in American Desert).

9. Make corn shuck figures (Art, Unit I, Concept A, Related Activity 2).

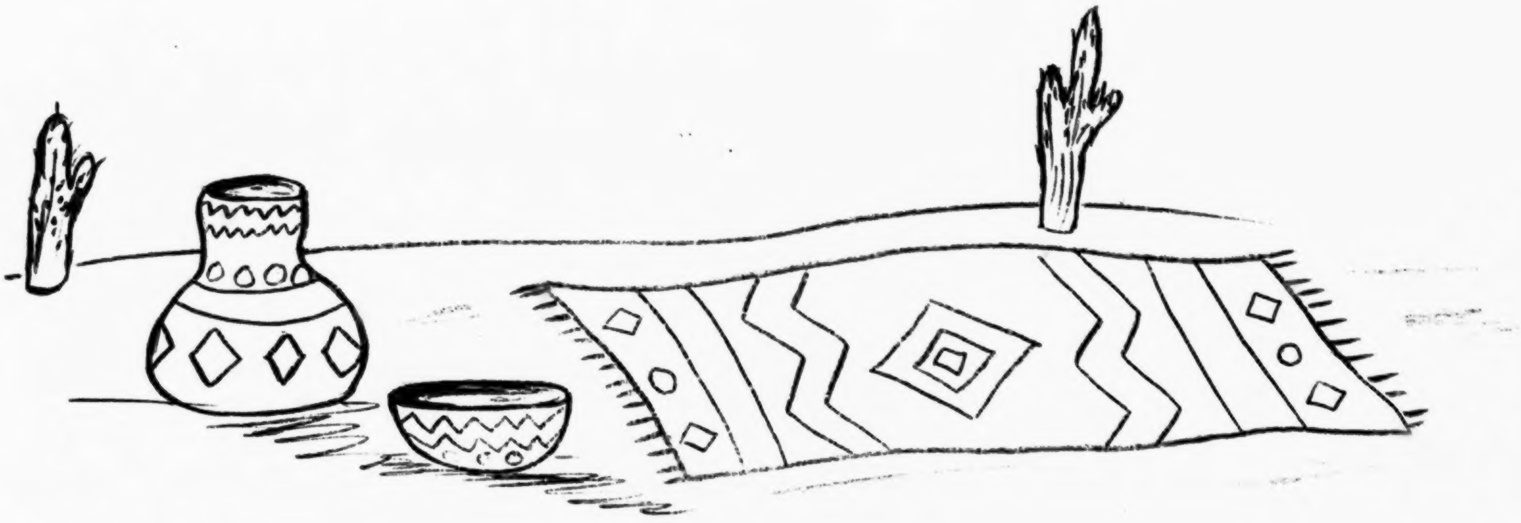
10. Invite a resource person to talk or show pictures.

11. Read Arabian Nights Stories.

12. Write to Navajo Indian Reservation for pen pals.

13. Weave or make pattern for weaving blankets using paper, or yarn.

14. Have a panel discussion about how some of the problems of the Navajos might be solved.



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Navaho Children	Encyclopedia Britannica
Oases in Librya	Encyclopedia Britannica
Walt Disney's - The Living Desert	Walt Disney

Concept A

READING AND VOCABULARY BUILDING CAN BE STIMULATED BY OUTDOOR EXPERIENCES

Outdoor Activity:

1. Take a "Five-Senses Nature Hike". Be quiet and look, listen, feel, smell and even taste some objects en route. Keep an individual list to be shared with entire class. Be sure to keep list of descriptive words that might apply to objects seen, heard, smelled, felt or tasted. Example: Soft-moss, clouds, dandelion.

Related Activities:

1. During the school year keep a card dictionary of new vocabulary. Such words as gall, tendril, terminal bud, or arbor can be used in creative writing or for science reporting. These cards may be hung on a string for visibility.

2. Make up a word meaning quiz to recognize the correct meanings of nature words. Example: Is a tiger a "coniferous" animal? Is a pine tree one of a "carnivorous" species?

3. Make up nature quiz (on flowers, on trees, on insects, on birds) emphasizing vocabulary learned. Example: Which tree suggests a seaside? (Beech) Which tree suggests a hand? (Palm)

4. Choose a simple object in nature (a blade of grass, a pine needle, etc.) and write as much as you can. Count number of words. Do it again, trying to use more words.

Concept B ORGANIZING INFORMATION CAN BE STIMULATED BY OUTDOOR EXPERIENCES

Outdoor Activities:

1. Begin walk with this list:

   We saw
   We heard
   We felt
   We smelled
   We tasted

   Children are alerted to the use of senses in enjoyment of nature.

2. Observe bird, animal, soil, or plants using appropriate materials: books, binoculars, soil test kit, etc. Organize findings on a fact sheet in outline form chart or report.

Concept C

CREATIVE EXPRESSION CAN BE STIMULATED BY OUTDOOR EXPERIENCES

Outdoor Activity:

1. On a listening trip pause often for the children to think how to describe a certain bird's call, the breeze,rustling leaves, the buzz of an insect, or some other sound. See how many different expressions of the same sound can be described by members of the group.

Related Activities:

1. Use Dr. DooLittle as a motivation and invent languages for animals. Write an incident or story using the language.

2. Give children background in Haiku poetry by reading for several days in short sessions. Choose a time when children are receptive to quiet listening. You can set the mood for this with Japanese art, music or film. Help children make discoveries about rhythm and syllables in Haiku. Take class outside for inspiration and meditation as they write original Haiku. Children leave room silently and go to a chosen spot alone. This is applicable to every sort of creative writing activity where you strive to create a "nature mood".

3. Bring in four to six nature objects and discuss. Have children write a play wherein the characters are the nature objects. The play may be true to life or imaginative.

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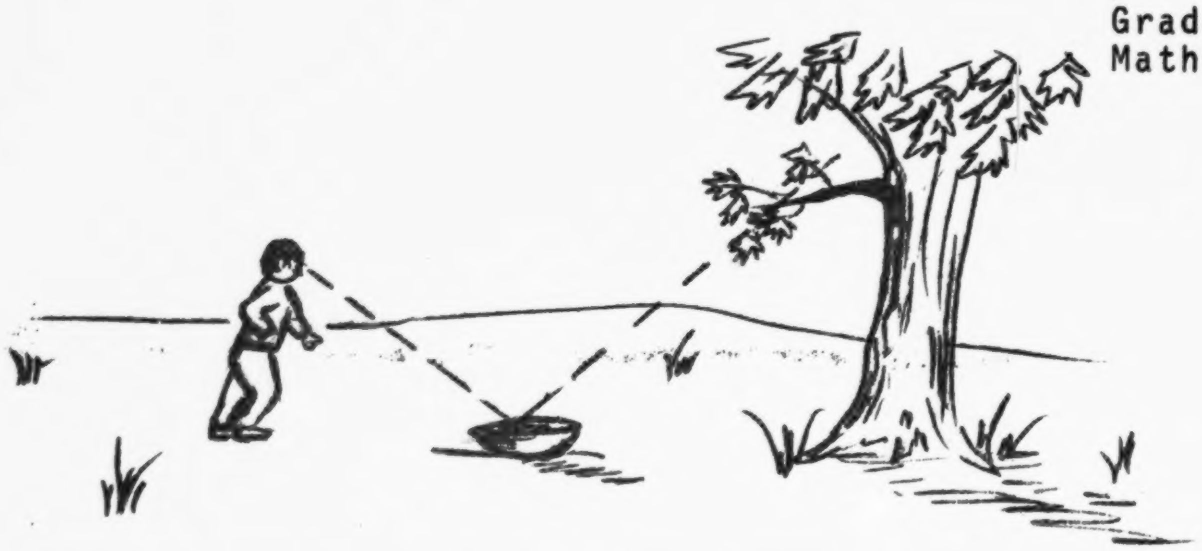
FILMSTRIPS: St. Bethlehem School

Observing	Eye Gate

Concept A MEASUREMENT IS EVERYWHERE

Outdoor Activities:

1. Cut and pile a cord of wood -- what is a board foot?
2. Determine the age of a tree by counting its rings.
3. Measure dimensions of buildings. Make scale drawings. (Social Studies, Unit I, Concept C, Activities 1 & 2)
4. Estimate elapsed time periods of half an hour or longer by observing and marking changes in the length of the shadows of trees or other objects, or by constructing a simple sundial.
5. Use the "stick method" to estimate the height of a tree. Have a child of known height stand at the foot of a tree. Then have the other children move back about 100 feet. Each should hold a stick vertically at arm's length, in front of himself, and use his thumb to mark off on the stick what appears to be the height of the child standing at the foot of the tree. Finally, by seeing how many times he can measure this distance on the tree, each child can make a good estimate of the tree's height.
6. Use the "11 to 1 ratio method" of measuring a tree. Starting from base of the tree, walk 11 paces and push a stick into the ground. Continue one pace further and place a mark. At this point have a person lie on the ground and sighting with the eye, project a line past the stick on the top of the tree. The height of stick, where the projected line passed the stick, gives in inches the height of the tree in feet.
7. Place a basin of muddy water on the ground, between you and the tree. Step back from the basin a distance equal to that from your eyes to the ground. You should see the top of the tree reflected in the water. If not, move the basin back until this is possible. The distance from the basin to the foot of the tree is the height. (When AC = HC then BH = AB)



8. Compare shapes of shadows (according to position of the sun).

9. Learn the pacing method of estimating distances of the ground. Measure 100 ft. distance on school yard. Have each child walk this distance several times, counting his paces each time. Then have him find the average number of paces he used in walking 100 ft. By dividing 100 ft. by this average number of paces, each child can find the normal length of his pace.

10. Determine angle of a slope using a simple clinometer (measure angles in a vertical plane). Stand at the base of a hill and sight along the top edge of the clinometer toward a second student who is at the top of the hill. When his line of sight is even with the eyes of the other student, a third person should record the angle indicated on the clinometer side.

Related Activities:

1. During an electrical storm, time the interval between seeing lightning and hearing its thunder. Then estimate how far lightning is from you. (Sound travels at 1,100 feet/sec., light travels at 186,000 miles/sec. If there is an interval of 5 seconds between flash and thunder, then the lightning is 5,500 feet away -- a little more than a mile).

2. Do work with personal measurements:
   Use such measurements in judging heights and sizes outdoors.
   Length of arm from elbow to end of longest finger.
   Height to top of head
   Height to shoulder or eye
   Height to top of hip
   Height to upward reach
   Length of pace
   A one inch distance on a finger
   Length of shoe or foot
   Length of arm
   Handspan
   Length from nose to end of out-stretched arm

Concept B

MANY NATURAL OBJECTS HAVE GEOMETRIC SHAPES

Outdoor Activity:

1. Find and name geometric shapes in an area. Draw pictures using these shapes as a basis.

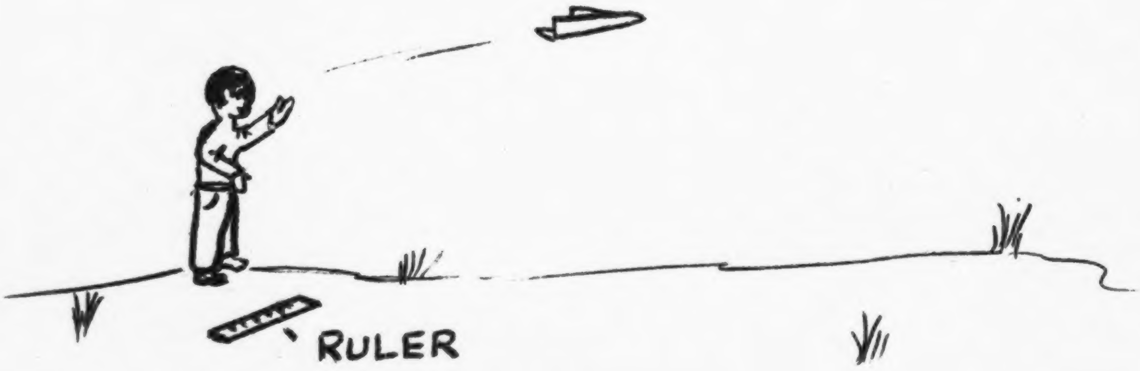
Concept C

GRAPHS ARE A USEFUL WAY TO RECORD INFORMATION

Outdoor Activities:

1. Graph data collected on projects.

2. Make paper airplane models. Fly them outdoors. Measure distance of each flight and record on bar or line graph.



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Concept A

NATURE OFFERS MATERIALS AND INSPIRATION FOR MANY ART EXPERIENCES

Outdoor Activities:

1. Look for shape and form in natural objects. Discover variety of shapes and forms (seed, leaves, fruit, twigs, animals, etc.)

2. Record the number of colors which can be observed in small areas and try to duplicate them with paints.

3. Gather dried grasses and other plants to make decorative arrangements.

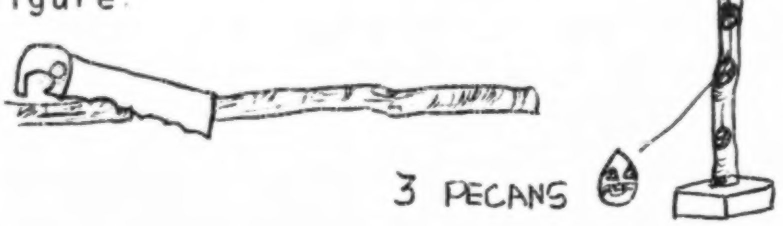
4. Experiment with branches, feathers, bones, grasses, seeds or other naturals, as paint brushes to create various effects such as massiveness or delicateness.

5. Use wood charcoal from a fire to make a sketch.

6. Find natural clay for modeling.

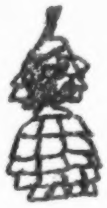
7. Make rubbings by placing paper over bark, rock, woven grass mats or leaves.

8. Saw a piece of branch at each end. Drill 3/4" size holes in the branch at different levels. Place three pecans in the holes. Paint squirrel faces on them. Build a 1" base for branch and nail base on. Shellac entire figure.



9. Gather objects such as wood bark and seeds to make a nature collage.

10. Saw one pine cone in half. Take one of the halves and fasten to a whole pine cone with wire. It will form a body and a head. Make eyes of acorns or stones.



11. Make animal figures out of objects such as twigs, stones and seeds.

12. Carve soft wood or tree bark.

13. Weave grasses and other vegetation into mats.

14. Collect smooth or colorful stones to make jewelry. Walnuts can also be used. Saw walnuts into half, Sand them to make them smooth. Finish with varnish or shellac. Fasten pins on the back or string on a necklace. Make little animals, owl's face, etc.

15. Gather natural materials to construct mobiles.

16. Gather natural materials to embed in liquid plastic for key chains, pins and paper weights.

17. Make prints of animal tracks by pouring plaster of Paris into tracks and letting it harden.

18. Gather barks, berries, and roots; crush and make natural dyes to color yarn. Weave yarn into mats on simple loom. (Stepping Stones to Nature - pages 64-71)

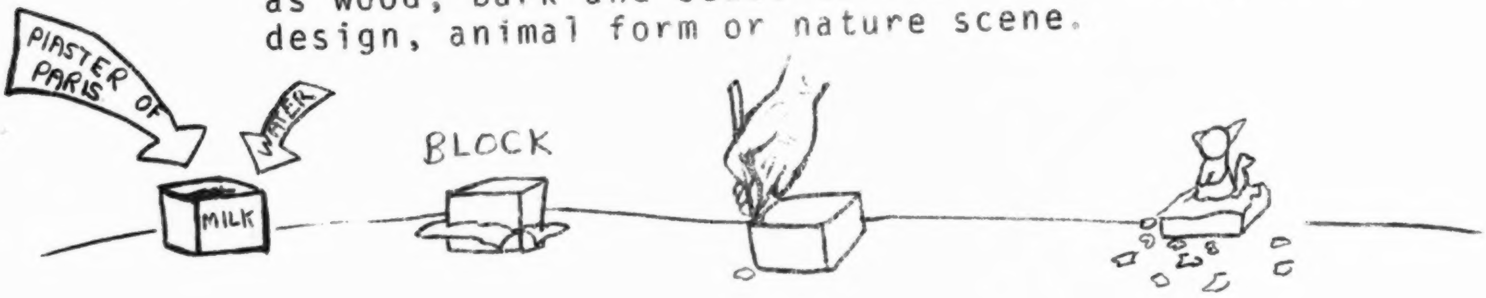
19. Gather broom sage to make grass skirts. Bunch together 7 to 10 pieces of broom sage with rubber band or string. Make 10 of these bunches. Then tie these bunches to a waistband made of string or twine. Tie around waist when finished.

20. Make primitive weapons using large and medium sticks. For clubs, burn one end of stick to smooth it. Paint colorfully. To make spears, follow the same procedure as above, but attach arrowheads or sharp stones with twine to one end of stick. Bows may be made from hickory saplings. Paint with bright colors.

21. Make ozalid (light-sensitive or architect paper) nature prints. Obtain ozalid paper from a craft center. Keep it well protected from the sun. Set up a gallon jug and put a small jar of ammonia in it. Cover tightly. Take a sheet of ozalid paper and place on it a leaf, flower or other flat object. Put sheet on a book or clipboard. Cover with piece of glass (caution: keep fingers off sheet. Hold from underneath.) Count slowly to 10, while holding glass-covered sheet in direct sunlight. The paper will change color. Quickly take glass and leaf off sheet. Slip sheet into gallon jug. Cover tightly, Wait until print changes color. Remove and frame.

Related Activities:

1. Make papiermache globe. Blow up balloon. Paste on three coats of newspaper strips. Let dry and then paint.
2. Gather corn shucks to make mats and dolls. (Nature Oriente Activities, Page 51)
3. Gather leaves to make spatter prints. Place leaf on a piece of paper. Hold over it a screen frame. Dip toothbrush into tempera paint and rub across the screen.
4. Make sand castings with mud, clay or plaster of Paris. Pour semi-liquid into milk carton or suitable container; when hardened, remove cover by peeling off. It is ready to be carved.
5. Make papiermache masks or animals (Stepping Stones to Nature - page 138)
6. Begin with burlap covered square. Gather objects such as wood, bark and seeds to fasten on burlap in a design, animal form or nature scene.



7. Cut vegetables in half. Draw a design on the vegetable and cut around it so that the design is raised, or cut around the design so that it is recessed. Then dip into paint and press onto paper.

8. Gather leaves to make foil prints. Place dull side of aluminum over veined side of leaf, and rub with finger tips to produce print.

9. Make shadow pattern designs. Hold leaves, twigs, flowers, etc., singly or in combinations, above paper and trace the patterns that the shadow produce.

10. Gather pebbles to make mosaics. Embed pebbles in clay or paste on cardboard or on wooden backing.

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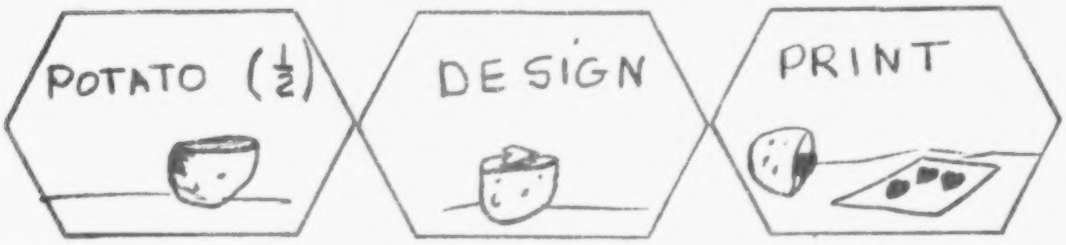

Concept A

MUSIC IS AN EXPRESSION OF NATIONAL CHARACTER

Outdoor Activities:

1. Gather materials from woods to make whistles, pan pipes, tom-toms, etc.

2. Tape record rhythmical sounds from outdoors. Have children identify sounds as tape is played.

Related Activity:

1. Have children learn and perform dances native to lands studied in social studies. Examples: Indian Rain Dance, Native Rhythms of the Amazon, Native Rhythms of the Congo, Dutch dance, (Land of the Dutch, Dutch, Dutch). Many of these dances are more effective when performed outdoors.

Concept B

MUSIC CAN BE USED TO DIVERT THE ENERGIES OF AN OVER-ACTIVE GROUP ON A HIKE

Related Activity:

1. Make up new lyrics to familiar tunes, using nature knowledge acquired on field trips.

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FILMSTRIPS:

Sounds Around Us	Eye Gate
Birds and Their Songs	Museum Extension Service

RECORDS:

Songs of the Forest	Droll Yankees
The Swamp in June	Droll Yankees
The Songs of Insects	Houghton-Mifflin
Birds on a May Morning	Droll Yankees
Voices of the Night	Houghton-Mifflin

Unit I - Safety

Concept A

OUTDOOR SAFETY IS AN IMPORTANT ASPECT OF OUTDOOR LEARNING

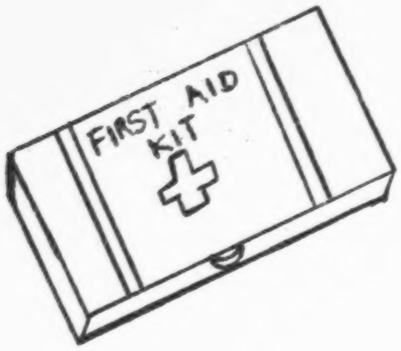
Outdoor Activity:

1. In outdoor activities, practice the following:

    a. Stay with the group
    b. Use visual signals
    c. Avoid running on trails
    d. Transport tools carefully
    e. Observe safety rules set up by the group
    f. Carry first aid kit
    g. Avoid poisonous plants and animals
    h. Handle fire and heat with special caution
    i. Drink only safe water

Related Activity:

1. Prepare the children for outdoor activities by discussing and agreeing upon the safety factors listed above.



UNSAFE TO DRINK

Unit II - Food

Concept A **SOME WILD PLANTS IN NATURE ARE EDIBLE**

Outdoor Activities:

1. Search for poke berry leaves. Collect and boil the leaves. Cool. Make a salad with the leaves.
2. Search for edible nuts, walnuts, pecans, hickory, etc. Sample each one.
3. Search for a growing grape vine. Cut for moisture.
4. Collect wild blackberries, blueberries and raspberries. Clean and sample.
5. Obtain a Boy Scout fieldbook or another resource for a complete list of edible plants. Search and identify. (Excellent for survival units)

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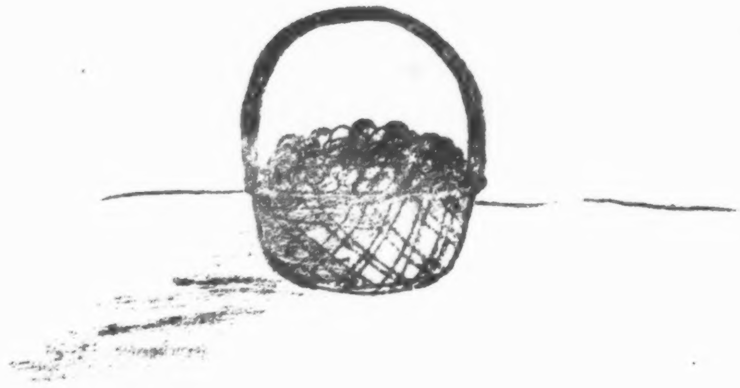


Unit I - The Earth and Its Changing Surface

Concept A MANY FORCES ARE CONSTANTLY CHANGING THE SURFACE OF THE EARTH

Outdoor Activities:

1. Find rocks that have been worn smooth by water or by the weather. Compare a freshly broken surface with a weathered surface.
2. Make mineral soil by rubbing two rocks together.
3. Find plants that are growing on rocks and slowly breaking them down.
4. Survey the school grounds to find native rocks.
5. Collect "man-made rock". (tile, plaster, concrete, brick, glass).
6. Collect samples of sand stone. Soak in water and break some open. (Social studies Unit II, Concept A, Outdoor Activity 2).
7. Test samples of rocks to see if they are limestone. Drop vinegar, lemon juice or other weak acids on the rock. (Social Studies Unit II, Concept A, Outdoor Activity 2) (Positive test will be the appearance of bubbles. Bubbles are carbon dioxide).
8. Test sandstone. (Look through hand lens to observe small particles of sand). (Social Studies Unit II, Concept A, Outdoor Activity 2).
9. Test shale. (Wet it or breathe on it to see if it has the smell of wet mud.) (Social Studies Unit II, Concept A, Outdoor Activity 2).
10. Break up a mixture of rocks in a cloth bag to determine types of crystals that make up these rocks. (Social Studies Unit II, Concept A, Outdoor Activity 2).
11. Follow gully to see how deltas are formed.

Related Activities:

1. Build a salt and flour relief map by using 2 lbs. plain flour to 1 box salt, adding water until mixture is stiff. (Social Studies Unit II, Concept A, Related Activity I)
2. Take a fresh apple and examine it. Then bake the apple in an oven. Notice the skin of the apple as it cools. The wrinkles on the apples happened about the same way as the "wrinkles" on the crust of the earth. These "wrinkles" could be compared to certain mountains and valleys. (Social Studies Unit II, Concept A, Related Activity 1).
3. Build a volcano. Make a cross section by using clay (1 lb. needed). Label interior parts when discussing the causes of volcanic eruption. (Social Studies, Unit II, Concept A, Related Activity 1).
4. Classify rocks according to texture, color, hardness, luster.
5. Invite a resource person to show slides of land forms too far away for children to visit.
6. Test rocks on hardness scale. (Social Studies Unit II, Concept A, Outdoor Activity 2).
7. Make class charts showing renewable resources of earth. (Social Studies Unit II, Concept A, Outdoor Activity 2).
8. Make a conglomerate (Baker Science Packet). (Social Studies Unit II, Concept A, Outdoor Activity 2).
9. Make sedimentary rock (Baker Science Packet). (Social Studies, Unit II, Concept A, Outdoor Activity 2).
10. Display rocks and minerals. (Social Studies Unit II, Concept A, Outdoor Activity 2).
11. List minerals we eat and minerals we wear. (Social Studies Unit I, Concept B, Related Activity 4).

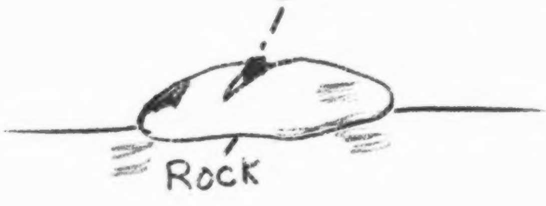
Concept B SOIL IS A RESULT OF MANY FORCES

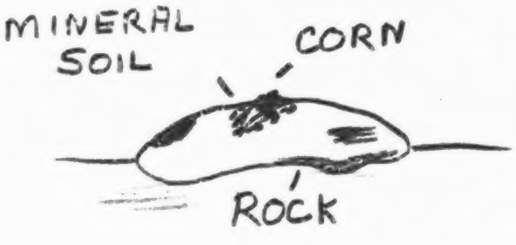
Outdoor Activities:

1. Plant a grain of corn in a crack in a rock. Leave for several days to observe how plants are able to break rocks into small particles of mineral soil.
2. Examine lichens to see how acids crumble the surface underneath. Compare to other surface of rock (Science Unit III, Concept B, Activity I).

Related Activities:

1. Fill a crack in a rock with water and put in freezer. After water freezes examine the rock.
2. Soak a piece of sandstone or limestone in water about 1/2 hour. Put rock in water after examining it first and allow each child to shake the jar about 10 times. Let it stand, then observe change in the rock.
3. Make a diagram (chart) to show rock - soil cycle.
4. Break up a rock and study its properties under a microscope. (Be sure to use goggles when breaking up rock.)





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Minerals and Rocks (EBF, 16 min., color) (Identification & Recognition)
Rocks That Form on the Earth's Surface (EBF, 16 min., color) (Sedimentary Rocks)
Rocks that Originate Underground (EBF, 16 min., color) (Igneous and Metomorphic)
Why Do We Still Have Mountains? (EBF, 20 min., color) (Deformation of Earth's Crust)
A World is Born (Disney, 20 min., color) (1st 2 billion years of our planet)
Erosion - Leveling the Land (EBF, 14 min., color)

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Rocks and Minerals - The Earth's Diary	Society for Visual Ed.
Our Earth -	Encyclopedia Britannica
The Earth is Always Changing	Eye Gate
Soil and Its Conservation	Eye Gate
The Conservation of Minerals	Eye Gate
Water and Soil	Eye Gate
This Land is Ours	Eye Gate
Our Mineral and Energy Resources (Record)	Coronet
Our Soil	Coronet

Keys - "Key to Common Rocks"

Film Loops:

Land Slide	Walt Disney
Mountains	Walt Disney

Unit II - Universe

Concept A

OUR SOLAR SYSTEM IS COMPOSED OF OUR EARTH AND MOON; OTHER PLANETS, METEORS, COMETS, AND ASTEROIDS WITH OUR SUN AS THE CENTER.

Outdoor Activities:

1. Observe sky on a cloudless night. Notice difference between "twinkle" of stars and the "steady" light of the planets.
2. Look at stars on a cloudless night. Try to observe their colors. Try to detect differences in the magnitudes of the stars.
3. Observe what planets are visible in the night sky.
4. Take pictures of the night sky with a camera.
5. Plan a sky watch to observe meteor showers.
6. Look at the moon through a telescope or through binoculars. Observe the craters and mountains.

Related Activities:

1. Divide children into groups, each group taking a different planet as their project, designing space ships, space suits, food and equipment for a landing on their particular planet.
2. Make a space map of the trip through space.
3. Read Greek and Roman legends of solar system.
4. Make scale models of the solar system.
5. Play game to illustrate earth-moon relationship: One boy or girl is earth and another is moon. Moon boy walks around earth boy. As moon boy revolves he never lets the earth boy see his back.

Grade 5
Science
Unit II

Concept B

OUR SUN IS ONE OF MANY STARS AND CREATES ITS OWN LIGHT

Outdoor Activities:

1. Use a telescope with a sun filtered lens to observe the sun. (Use great care!!)

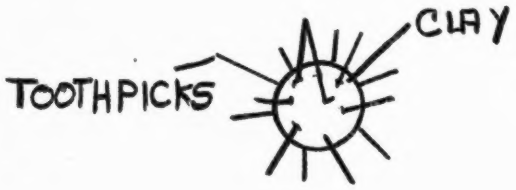
2. Measure the shadows of various objects at different times of the day to show how earth moves around the sun.

Related Activities:

1. Make a ball of clay about an inch in diameter and stick toothpicks in it to simulate how luminous objects send out light.

2. To show how a mirror reflects light, darken the room, place a flat mirror on the top of a table, direct a beam from a flash light from directly above. Then direct beam from one side so it hits mirror at angle. Do in darkened room or strike two chalk board erasers together near the mirror so that the chalk dust makes the light rays visible.

3. Shine light on different materials to see whether light is reflected or diffused.



Concept C — THE CONSTELLATIONS ARE GROUPS OF STARS WHICH SEEM TO BE ARRANGED IN PATTERNS

Outdoor Activities:

1. To show that the constellations are made up of millions of stars, place about 20 marbles on the ground in a cluster - put each marble a finger width from each other, back away 50 feet, then 75 feet, then 100 feet and observe what happens.

2. Observe stars on a cloudless night. Compare their colors and brightness. (Note: All stars in a constellation will not be of the same magnitude or brightness.)

Related Activity:

1. Make pictures of constellations by punching pin holes in a circular piece of construction paper. Attach circle to one end of a cardboard tube. Look through tube toward light to see constellations.

Concept D — OUR SOLAR SYSTEM IS A SMALL PART OF A GALAXY CALLED THE MILKY WAY

Outdoor Activity:

1. Compare a city, seen from a distance, to our galaxy.

Related Activities:

1. Use a stencil to obtain shape of the Milky Way. Spatter paint to show the stars in the galaxy.

2. Make frieze using black paper to represent space. Show the location of various galaxies using glitter to form the galaxies. Spray with hair spray and glitter will not fall off.

3. Use a toy balloon to represent the universe. Cut out a number of small pieces of paper and paste them to a rubber surface to represent various galaxies. Keep blowing up balloon and as it gets larger all the paper galaxies will get farther apart. The universe is represented by the surface of the balloon not the inside of the balloon.

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The Sun	Encyclopedia Britannica
The Solar System	Encyclopedia Britannica
Astronomy Through the Ages	Encyclopedia Britannica
The Stars	Encyclopedia Britannica
The Night Sky	Encyclopedia Britannica
Finding out About Day and Night	Society for Visual Education

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What is in the sky?
Our Earth is Moving
Our Earth is Part of the Solar System
Stars and Planets
Light in our Daily Lives
The Moon - Our Nearest Neighbor in Space
The Stars in the Sky
Man Studies the Sky
Our Sizzling Sun
Our Silvery Moon
The Milky Way
Sky Patterns
The Earth in Space
Our Earth in Motion

Films: (Project Mid-Tenn)

Earth's Satellites - Explores of Outer Space (EBF, 17 Min., Color)
    (Man-Made Satellite)
Exploring the Night Sky (EBF, 11 Min., B & W)
What is Space? (EBF, 11 Min., Color)

Transparencies:

Star and Constellation Recognition No. 46

46 A - The Big Dipper
46 B - The Big Dipper's Seasonal Changes
46 C - Location of North Star
46 D - Location of the Dragon
46 K - Location of the Northern Crown
46 L - Orion, A Winter Constellation
46 M - Traurus, The Bull
46 O - Pegusus, The Winged Horse
46 P - Leo, The Lion
46 Q - Cygnus, The Swan
46 R - Aquilla, The Eagle
46 S - Lyra, The Lyre
46 T - Scorpius, The Scorpion
46 U - The Northern Polar
46 V - Constellations
46 W - The Dipper Through the Ages

Rocks and Minerals No. 37

37 A - Earth's Crust
37 M - Coal Deposits
37 T - Weathering
37 U - Sedimentation

The Earth No. 25

25 A - The Solar System
25 B - Approximation of Relative Sizes and Distances of Planets to Sun.

The Land That Supports Us No. I

1 O - Poor Farming Practices Damage Resources
1 S - Good Land Use, Conserves Soil, (Grassed Waterway Terraces)
1 T - Good Land Use, Conserves Soil (Contour Strip Cropping)

Our Soil Resource - Conservation No. 2 (Whole Packet)

Geologic Functions (For Advanced Groups)

Science No. 4 - General Science- Page 21

Unit III - Plants

Concept A

PLANTS ARE CLASSIFIED ACCORDING TO THEIR STRUCTURE

Outdoor Activities:

1. Use magnifying lens and a microscope, study molds, algae, fern spores,mosses, puff balls, toad stools, and lichen.

2. Compare conifers and deciduous trees for similarities and differences. (Math - Concept B, Outdoor Activities 2 and 4).

Related Activities:

1. Make a chart or display of the classification of plants.

2. With a safety razor blade, make the thinnest possible shaving from freshly cut pieces of cork, tomato, apple, celery stalk. Look at the plant shaving with the magnifying glass and microscope. Observe the cell structure of Elodea (water plant).

3. Make clue charts for trees.

4. Use resin to preserve leaves. Make blue prints, ink silhouettes, or carbon paper prints of leaves. Press leaves between absorbent paper (Baker Nature Study Packet).

5. Smoke prints of leaves may be easily made by following the steps shown below: (Nature - Oriented Activities, Van Der Smissen and Goering)

   a. Cover a bottle (round and smooth) with a thin layer of grease or vaseline.
   b. Fill with cold water and cork it lightly.
   c. Hold bottle over a candle flame until it is covered evenly with soot.
   d. Place a leaf, vein side up on a layer of newspaper and roll the sooty bottle over the leaf.
   e. Remove the leaf and lay it vein side up on clean newspaper.
   f. Cover leaf with a sheet of white paper.
   g. Roll over the white paper and leaf with a clean round bottle or other roller.

Concept B

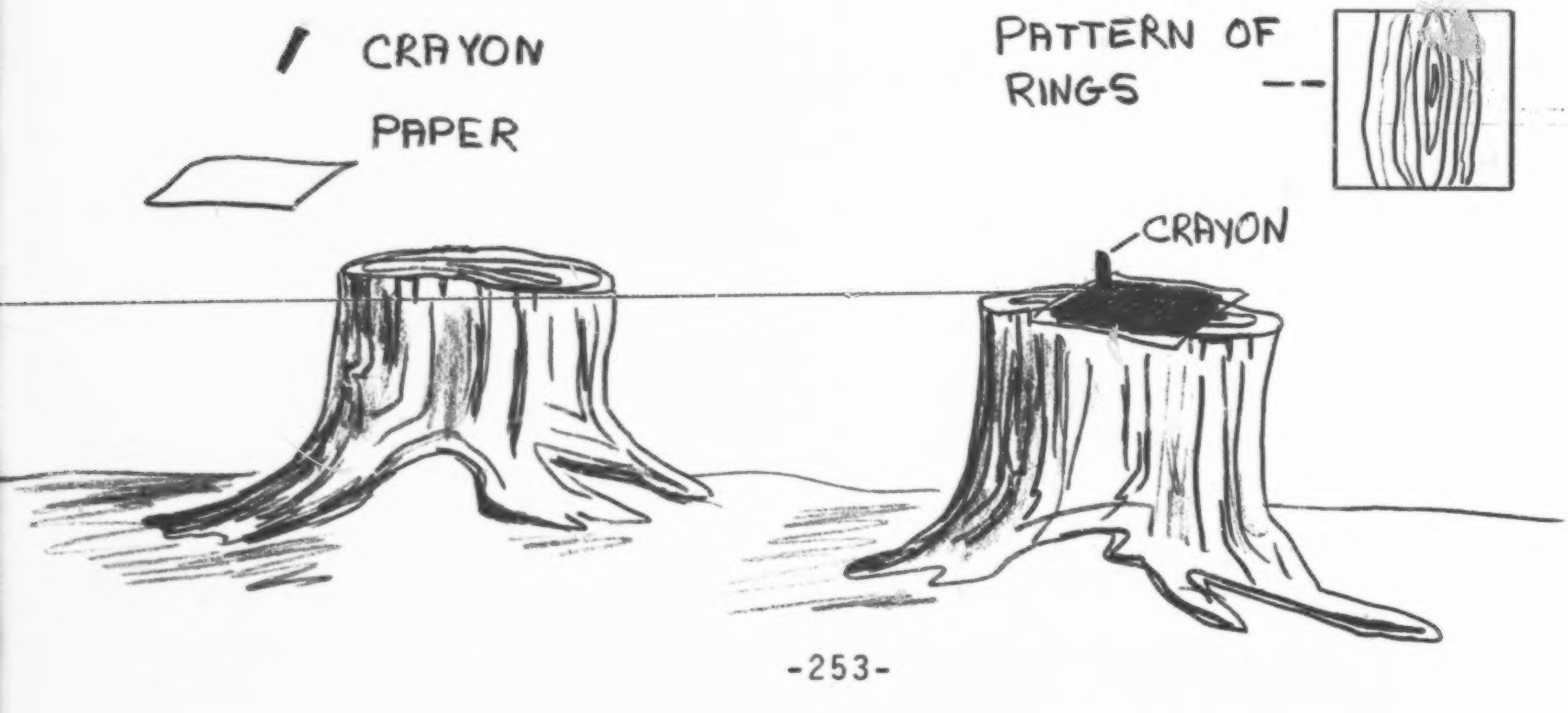
PLANTS RANGE FROM THE SIMPLE MICROSCOPIC VARIETY TO THE LARGE COMPLEX OR MANY CELLED VARIETY

Outdoor Activities:

1. Gather mosses, liverworts and ferns. Use the microscope to observe the cell structure of these plants.
2. Collect algae ("scum") from a pond.
3. Study soil from the woods to see what grows in it.
4. Examine cross sections from trunks of several trees and plants.
5. Put paper on top of a stump and rub a crayon or soft pencil lead across to obtain pattern of growth rings.
6. Observe the differences in patterns, textures, colors of bark. (Smoother barks may be printed as in 5).

Related Activity:

1. Grow mold gardens and bacteria (Baker Nature Study Packet).



Concept C

PLANTS MANUFACTURE THEIR OWN FOOD IN GREEN LEAVES

Outdoor Activities:

1. Observe how leaves are arranged in pairs or alternately so that each leaf gets sunlight.
2. Observe light affecting food production in plants (Baker Nature Packet). Growth in dark - growth in light - (comparison).

Related Activity:

1. Observe the irish potato, bean seed, tulip bulb, onion or rhyzome of iris, to see how they shrink and wither as the plant grows and feeds from it. (Bean growth is easiest.)

Concept D

ROOTS OF PLANTS TRANSPORT WATER FROM THE SOIL INTO THE PLANT. THE WATER GOES THROUGH THE STEM INTO THE LEAVES AND RETURNS TO THE AIR

Outdoor Activity:

1. Place a plastic bag over a twig of a tree, air tight. Observe.

Related Activities:

1. Put a stalk of celery or a Queen Ann's Lace flower in colored water. Observe.
2. With the microscope examine stoma in leaves.

Concept E PLANTS STORE FOOD IN ROOTS, STEMS, LEAVES, BULBS AND SEEDS

Outdoor Activity:

1. Make a survey of fruit and nut trees growing in the neighborhood.

Related Activities:

1. Do a class survey showing the foods eaten by the class members that are roots, stems, leaves, bulbs and seeds.
2. Group pictures of food according to the part of plant where food is derived.

Concept F THE SUN'S ENERGY IS NECESSARY FOR GROWTH OF GREEN PLANTS

Outdoor Activities:

1. Use a cardboard box to cover grass, a paper bag to cover a healthy plant, and a paper bag to cover a small branch bearing leaves. Observe every couple of days and record data (after there is a change in coloration, take off bags to see if they will turn green again).

	DAYS	GRASS	PLANT	BRANCH
1.				
2.				
3.				
4.				
5.				

2. Plant a class garden. Cover a select group of plants with brown paper bags and observe differences in growth of plants that are covered and those that are not covered.

3. Test plants for starch. (Iodine turns blue-black when starch is present).

Concept G

PLANTS PLAY AN IMPORTANT ROLE IN CONSERVATION

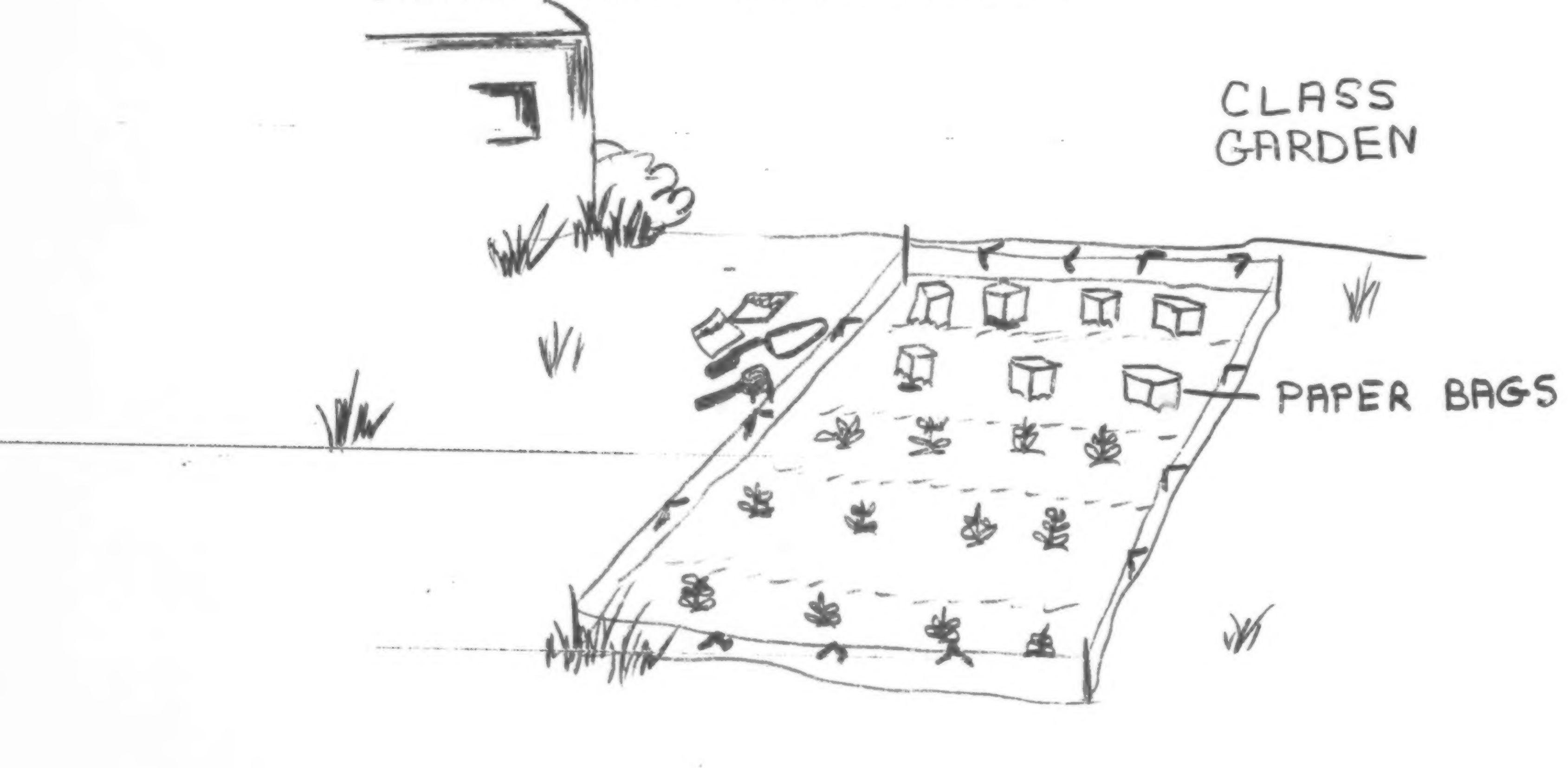
Outdoor Activities:

1. Find an example of erosion near the school and use conservation practices to prevent further erosion.

2. Take a trip. Notice the soil covering where erosion is extreme. Compare with a field where erosion is slight.

3. Test soil for chemical deficiencies.

4. In school garden, use varying amounts of fertilizer on similar plants. Observe effects.



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Plants and Seeds	Eye Gate
The Story of Seeds	Eye Gate
Trees: Man's Best Known Plants	Eye Gate
Plants Grow and Change	Eye Gate
What is a Plant?	Benefic Press
The Structure of Plants	Encyclopedia Britannica
Plants are Living Things	Encyclopedia Britannica
Work of Flowers	Encyclopedia Britannica
Seeds and How They Travel	Encyclopedia Britannica
Seeds and Seed Travels	Society for Visual Education
Soil Conservation Today (With record)	Society for Visual Education
Our Soil	Coronet
Our Forests	Coronet
Our Grasslands	Coronet

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Behavior of Plants
How Living Things Respond
Parts of a Flowering Plant
Green Plants
Living Things Need Other Living Things
Trees Grow

Films: (Project Mid-Tenn)

Flowers at Work (2nd Edition) (EBF, 11 min., color)
Life in a Vacant Lot (EBF, 11 min., color)
A Green Plant and Sunlight (EBF, 11 min., color)
Seed Disposal (EBF, 11 min., color)

Transparencies:

Our Plant Resources (Conservation No. 4)
    4 A - Plants - Source of Our Food
    4 B - Plants - Basis of Life on Earth

Microscopy and Microbiology (Science No. 48)
    48 P - Blue Green Algae
    48 J - Types of Bacteria

Our Plant Resources (Conservation No. 4)
    4 F - Plants grow from the soil
    4 G - Plants help make soil
    4 H - Plant Succession - Grasslands
    4 I - Plant Succession - Forests
    4 J - Plant Succession - March to meadow
    4 L - Man uses Plants to Protect the soil
    4 W - Plants and the cycle of Life

Plant Structure Part I and Part II (Whole Packet)

Science No. 3 - S - Biology
    Page 235 - 236 - 237 - 238 (23 & 24)
    Page 47 - 62 - 34 - 35 - 63 - 64
    Page 90 - 97

Science No. 4 - General Science
    Page 198 - 207 - 201 - 205 (25 & 26)
    Page 209 - 211 - 225 (27)

Film Loops:

Growth and Pollination of Corn	Walt Disney
Fruit Ripening	Walt Disney
Flowers Opening	Walt Disney

Unit IV - Animals

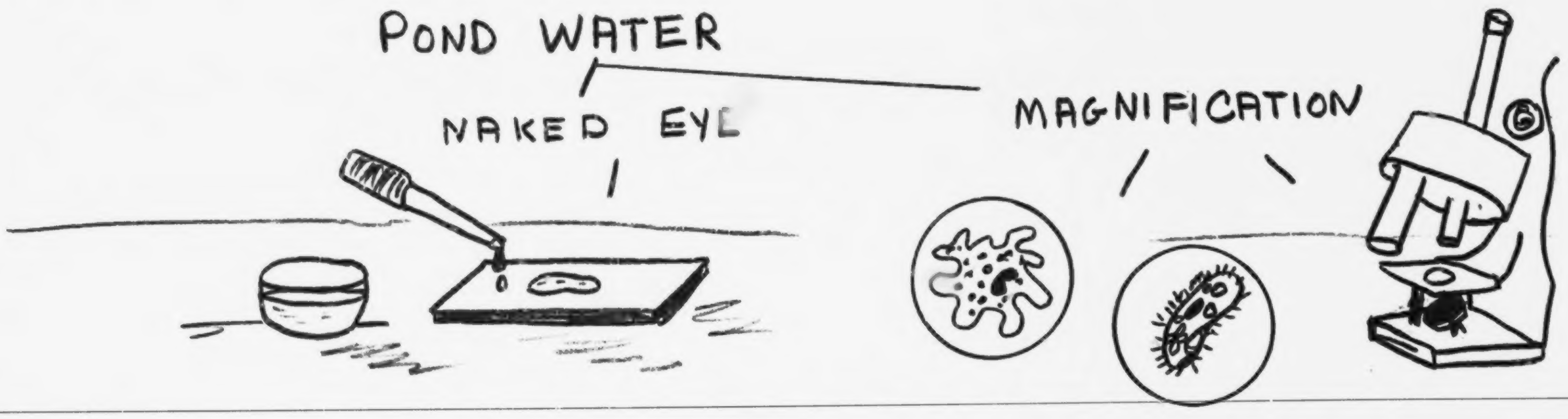
Concept A — ANIMALS MAY BE IDENTIFIED BY STRUCTURE

Outdoor Activities:

1. Collect specimen of pond water from different levels of the pond. Observe life present using naked eye, then under magnification.
2. Collect parts of animal skeletons and compare.
3. Make a mold of animal or bird tracks using plaster of paris or clay.
4. Visit a museum to see mounted specimens.
5. Examine insects for the spiracles on the abdomen. Compare with other arthropods.

Related Activities:

1. Make simple posters of the animal kingdom.
2. Make a mobile with pictures and titles showing the group of vertebrates. A map or bulletin board may be used instead.
3. Make similar display of invertebrates.



Concept B

ANIMALS MAY SIMPLY BECOME LARGER AS THEY GROW OLDER OR THEY MAY CHANGE THEIR FORM COMPLETELY.

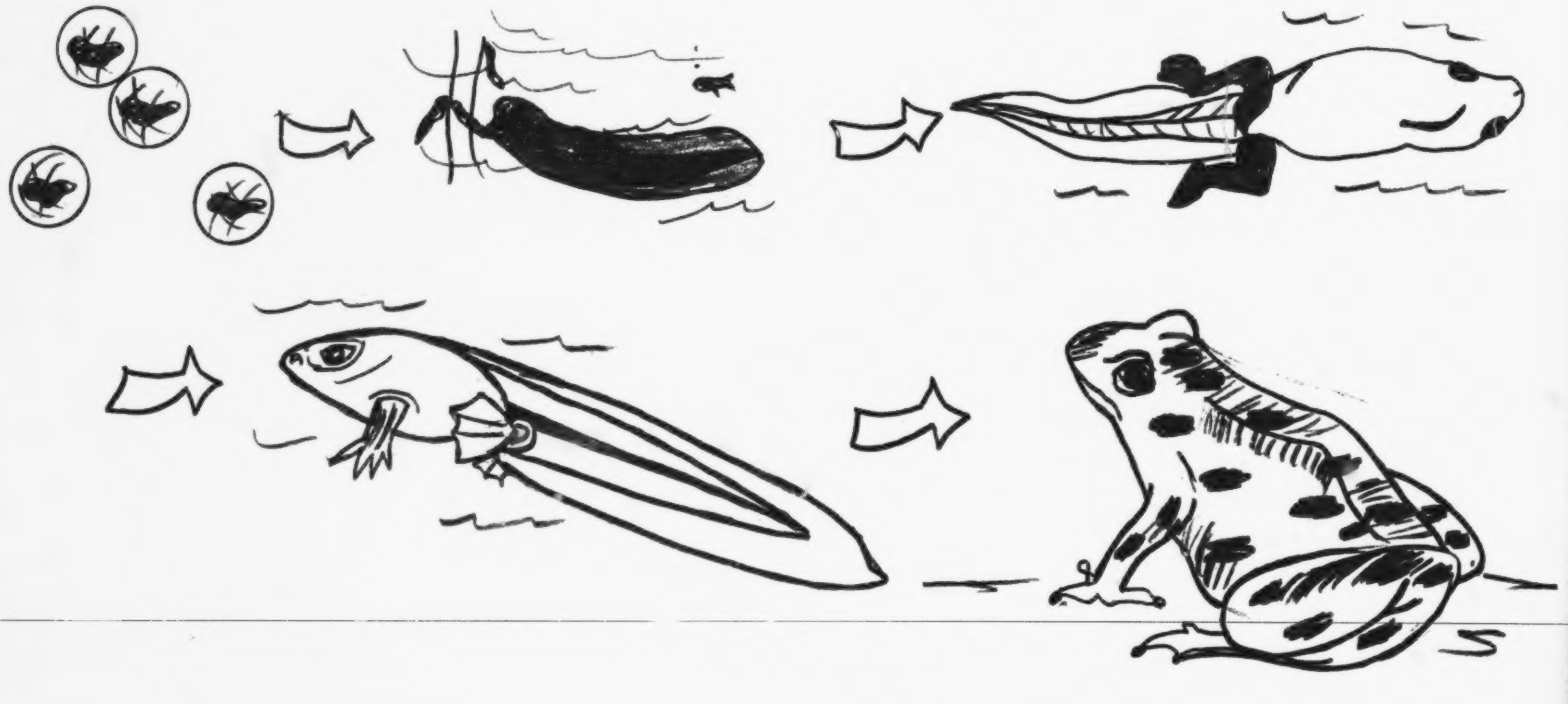
Outdoor Activities:

1. Take a trip, observe ant colonies. Look for different forms.
2. Collect frog eggs at a pond. Keep in an aquarium. Observe changes in appearance.

Related Activities:

1. Display snapshots of children to show changes in their growth. Contrast with growth of other animals.
2. Discuss stages of growth to maturity of various animals.
3. Use a classroom chart to show the "Life Cycle" of various animals.

Life Cycle of a Frog



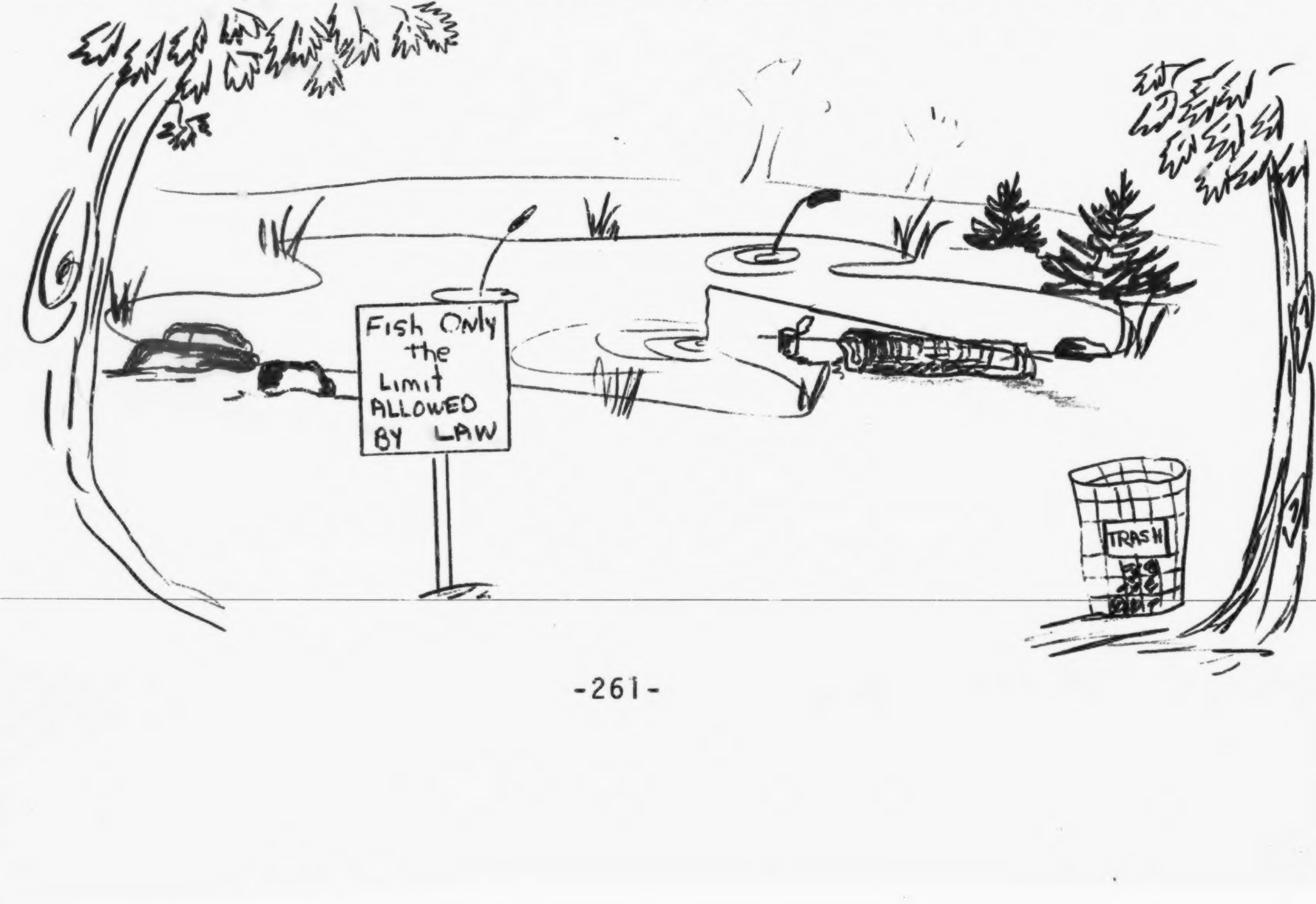
Concept C MAN HAS A RESPONSIBILITY TO PRESERVE WILDLIFE

Outdoor Activities:

1. Prepare feeding stations for birds and squirrels.
2. Improve a wildlife habitat by planting food and shelter plants.
3. Visit a game preserve.

Related Activities:

1. Invite a game warden to explain game laws, stocking fish, habitat improvement, and other management practices.
2. Write to the State Department of Conservation for information on laws protecting wildlife.
3. List nearby State Parks and Reserves. Encourage children to visit.
4. Make posters on the various aspects of wildlife conservation.


Fish Only the Limit ALLOWED BY LAW
TRASH

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What is a Vertebrate?	Encyclopedia Britannica
Discovering Amphibians	Encyclopedia Britannica
Mammals	Encyclopedia Britannica
One Celled Animals	Encyclopedia Britannica
Different Kinds of Worms	Encyclopedia Britannica
The Sea Star and Related Spiney Skinned Animals	Encyclopedia Britannica
How Animals Live in the Artic	Educational Project Corporation
How Animals Live in the Air	Educational Project Corporation
How Animals Live in the Desert	Educational Project Corporation
How Animals Live in Fresh Water	Educational project Corporation
How Animals Live in Grasslands	Educational project Corporation
How Animals Live in the Sea	Educational Project Corporation
How Animals Live in the Swamps	Educational Project Corporation
Beaks and Feet of Birds	Society for Visual Education
Animals Grow and Change	Eye Gate House

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How Animals live in Fresh Water
How Animals live in Swamps
How Animals live in the Sea
Animal Behavior
Behavior of Simple Animals
Hibernation
Land and Water Migration
How Amphibians get their food
How Mammals get their Food
How Reptiles get their food
Animals affect man and other living things
Toads Grow
Our Aquarium

Films: - (Project Mid-Tenn)

Beginning of Vertebrate Life (EBF, 11 min., color)
Biography of a Bee (Moody 14 min., color)
Life in the Sea (EBF, 11 min., color)
Life story of the Earthworm (EBF, 10 min., color)

Transparencies:

Our Animal Resources (Conservation No. 5)

- 5 H - We Enjoy Wildlife
- 5 P - The Land Cannot Support Unlimited Animal Life
- 5 R - We Sometimes Damage Wildlife Habitat
- 5 E - Animal Food Chains
- 5 B - Animals Need Food

Science No. 3-S (Biology)
Page 32

Microscopy and Microbiology (Science No. 48)

- 48 L - Amoeba
- 48 N - Paramecium

s. op.

Grade 5
Social Studies
Unit I

Unit I - Colonial America

Concept A

THE EARLY SETTLERS IN AMERICA FOUND AN ABUNDANCE OF NATURAL RESOURCES

Outdoor Activities:

1. Make flour, collect seeds of barley, wheat and oats. Dry them in the sun. Use two clean smooth rocks to grind the seeds. Sift to separate the flour from the chaff.
2. Visit a wooded area and discuss whether or not this would have been a good place for pioneers to live. Why or why not? What natural resources make it good (trees, water, etc.,). What disadvantages? If you had been a pioneer settling here where would you build your home? Of what materials? What would you probably wear? Crops? Hunt? Fish?

Related Activities:

1. Have pupils write an article for a newspaper, describing the land, climate, location and natural resources of the colony studied.
2. List and discuss the problems colonist had to face and the hardships they endured in their daily lives.
3. Collect dried grasses and other plants to make arrangements for decorative purposes.
4. Collect pebbles, seeds and other plant parts to make a collage. Use surfaces such as a slab of wood or cardboard as the background. (Art, Unit I, Concept B, Activity 7)
5. Visit a water mill to see wheat and corn being ground into flour and meal.

Concept B

AN UNDERSTANDING OF MAN'S EARLY HISTORY BRINGS AWARENESS AND APPRECIATION

Outdoor Activity:

1. Explore an old cemetery to discover the local history recorded on the grave stones and surroundings.

Related Activities:

1. Begin a project of weaving, knitting and quilting. Give the children a choice as to which activity they would like. Make these activities a year-long experience.
2. Obtain some old tools and find out how man used them.
3. Personify an old tree as an old man and discuss the "neighbors" he has in his life time such as the uses of land over the years.
4. List natural resources wasted by Americans moving westward. (Science, Unit I, Concept A, Related Activity 2).

Jones
MARY
1880-1940
Rest In
Peace

Concept C

THE COLONIST HAD THEIR OWN IDEAS ABOUT SELF-GOVERNMENT AND RELIGIOUS FREEDOM

Outdoor Activities:

1. Participating in camp government.
2. Cooperation in camp activities.

Related Activities:

1. Organize a class council, using representatives from each of the three fifth grade classes. Discuss qualifications of a good representative. Have the children nominate candidates and elect representatives by ballot. After each council meeting the representatives may report to the class and secure the group's criticisms and suggestions.
2. Dramatize "A meeting of the House of Burgesses."
3. Have a "mock" presidential election.

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Middle Colonies	McGraw-Hill
South Begins	McGraw-Hill
Earning a Living in the Colonies	McGraw-Hill
Democracy Begins in America	McGraw-Hill
Columbus Day	Encyclopedia Britannica
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Patrick Henry	Encyclopedia Britannica
Betsy Ross	Encyclopedia Britannica
Frances Scott Key	Encyclopedia Britannica
George Rodgers Clark	Encyclopedia Britannica.
Daniel Boone	Society for Visual Education
Pioneers	Society for Visual Education

Unit II - United States Geography

Concept A

THE UNITED STATES HAS VARIED GEOGRAPHY AND RESOURCES

Outdoor Activities:

1. Visit a sawmill or lumber company.
2. Visit a rock quarry. (Science Unit I, Concept A, Related Activities 6, 7, 8, 9, and 10).
3. Visit a water purification plant.
4. Visit a T.V.A. substation or generating plant.

Related Activities:

1. Examine a graphic relief map to observe the land forms in the United States. (Science Unit I, Concept A, Related Activities 1, 2, and 3).
2. Discuss the terms needed in using maps: scale of miles, equator, poles, altitude, sea level, peninsula, gulf and others.
3. Discuss the relationships between resources and ways of earning a living.
4. Locate on the map the major mineral resources of the United States.
5. Trace the possible route of iron ore from Hibbing, Minnesota, iron range until it has become an axle on the school bus.
6. Trace a grain of wheat from the field to a hamburger bun.

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British Columbia in the Yukon,	Society for Visual Education
The Far Western States Series:	
The Natural Environment	Encyclopedia Britannica
The People and Their History	Encyclopedia Britannica
Industry	Encyclopedia Britannica
Agriculture	Encyclopedia Britannica
Commerce	Encyclopedia Britannica
Life and Culture	Encylcopedia Britannica
Independence Day	Encyclopedia Britannica
Middle States (Series):	
Industry	Encyclopedia Britannica
The People and Their History	Encyclopedia Britannica
Commerce	Encyclopedia Britannica
Life and Culture	Encyclopedia Britannica
The Natural Environment	Encyclopedia Britannica
Northeastern States: (Series)	
The Natural Environment	Encyclopedia Britannica
The People and Their History	Encyclopedia Britannica
Industry	Encyclopedia Britannica
Commerce	Encyclopedia Britannica
Agriculture	Encyclopedia Britannica
Southeastern States: (Series)	
The Natural Environment	Encyclopedia Britannica
The People and Their History	Encyclopedia Britannica
Industry	Encyclopedia Britannica
Commerce	Encyclopedia Britannica
Life and Culture	Encyclopedia Britannica
Agriculture	Encyclopedia Britannica

Filmstrips - St. Bethlehem School Library:

Southwestern States: (Series)

The Natural Environment	Encyclopedia Britannica
The People and Their History	Encyclopedia Britannica
Industry	Encyclopedia Britannica
Life and Culture	Encyclopedia Britannica
Agriculture	Encyclopedia Britannica

Northwestern States: (Series)

Natural Environment	Encyclopedia Britannica
The People and Their History	Encyclopedia Britannica
Industry	Encyclopedia Britannica
Commerce	Encyclopedia Britannica
Agriculture	Encyclopedia Britannica

The Story of Bread	Society for Visual Education
Thanksgiving Day	Society for Visual Education

Unit III - Tennessee

Concept A

TENNESSEE IS SIMILAR TO AND DIFFERENT FROM OTHER AREAS OF OUR COUNTRY

Outdoor Activities:

1. Visit a tobacco market.
2. Visit a fire tower, sawmill, dairy farm.
3. Go on a general observation hike to observe different types of wildlife in the area.

Related Activities:

1. Keep daily temperature record for 30 days and find the average temperature for that period. (Math, Unit I, Concept B, Related Activity 1).
2. Gather information and make a rainfall graph. At the end of this period find the average. (Math, Unit I, Concept B, Related Activity 1)
3. Draw a large travel map of Tennessee showing points of interest to visit in an imaginary town. Mark sections of the state known for fruit growing, cotton, mining and dairying. (Math, Unit III, Concept A, Related Activity 1).

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Creative Writing

Concept A OUTDOOR EXPERIENCES MOTIVATE CREATIVE EXPRESSION

Outdoor Activities:

1. Let children develop their imagination through written interpretation of the events of a hike in the form of a tall tale.
2. Describe objects seen outdoors.
3. Do Charades - Use new additions to vocabulary from outdoor activity. After each charade has been guessed, the members of the class might record spelling and simple definitions.
4. Dramatize action out-of-doors by use of verbs (waddle, hop, leap) and also adverbs (swiftly, quickly, etc.)
5. Review an outdoor activity by preparing an "on the spot" T. V. or radio program.
6. Draw a line down the center of a sheet of paper. On the left, list objects that you can see or feel. On the right, list words which describe each object.

Related Activities:

1. Have a conversation between two characters (perhaps a rabbit and an eagle or two birds).
2. Keep field notes.
3. Write poems, diaries, logs, newspapers, stories, songs, menus. (Health, Unit II, Concept A, Related Activity 1).
4. Keep a booklet containing all creative writing.
5. Keep a "word dictionary" of all words learned through their outdoor experiences.
6. Compose Tanka poetry. Tanka is a form of Japanese poetry written about the seasons. It consists of five lines. There are five syllables in the first line, seven syllables in the second line, five in the third and seven syllables in the fourth and fifth.

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Words That Show Action	Encyclopedia Britannica
What is a Sentence	Encyclopedia Britannica
Words Used Instead of Names	Encyclopedia Britannica
Words That Describe Things	Encyclopedia Britannica
Words Telling How, When and Where	Encyclopedia Britannica
Using Punctuation Marks	Encyclopedia Britannica

Unit I - Measurement

Concept A MEASUREMENT IS EVERYWHERE

Outdoor Activities:

1. Measure surface areas to make a map to scale.
2. Measure the perimeter of a school site.
3. Measure the circumference and diameter of a tree and compare.
4. Draw a scale plot for a school garden.
5. Use "Rola Tape" for measurement activities.
6. Pace off an acre.
7. Use a Biltmore Stick to find the number of board feet in a tree.

Related Activity:

1. Find the dimensions of your classroom.

Concept B

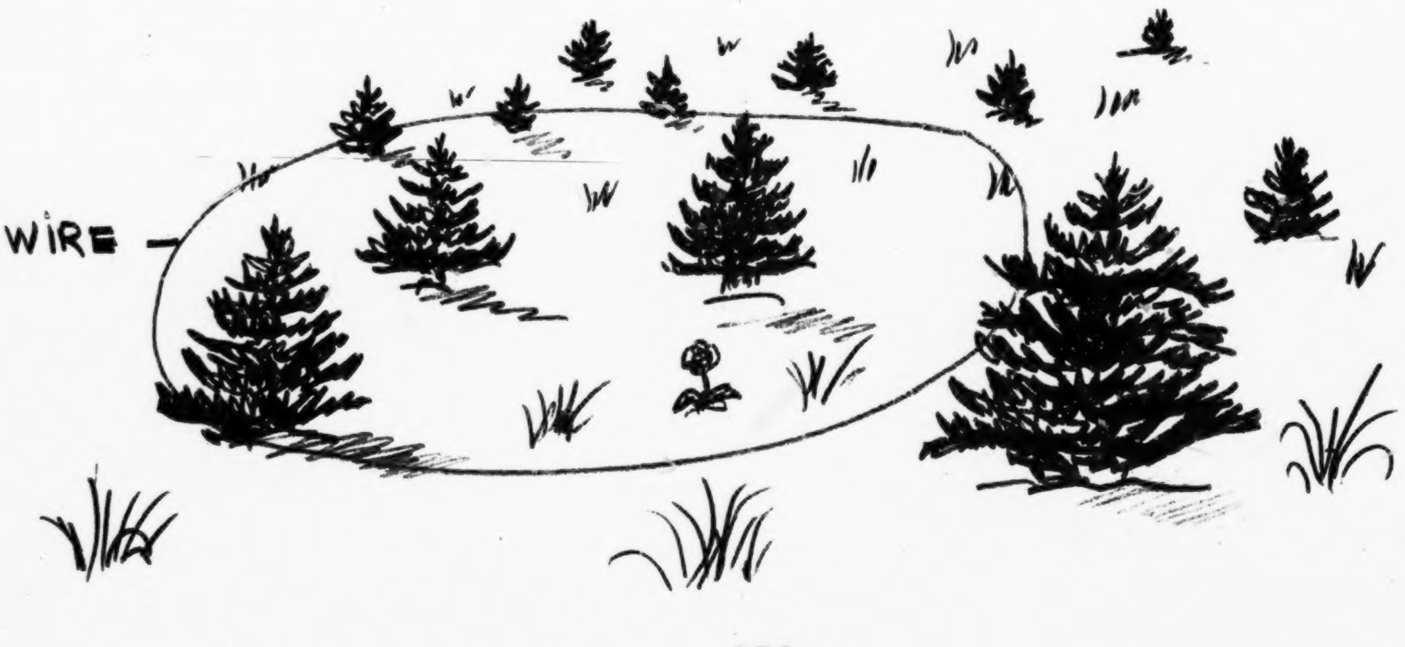
RATE AND RATIO ARE METHODS OF COMPARISON

Outdoor Activities:

1. Make a survey of different types of trees and distributions of plants in a field. Make a circle of wore, throw it on a vegetated area, and see how many of a certain type of plants fall within the circle.
2. Fractions and whole numbers: Take a tree census, determining the kinds of trees in a particular area. Determine what fractional part of the total the red oaks were. (Science Unit III, Concept A, Outdoor Activity 2).
3. Figure the rate of flow of a river or creek.
4. Count the trees in an acre. (Science Unit III, Concept A, Outdoor Activity 2).

Related Activities:

1. Chart the rainfall for a given period.
2. Chart the average outside temperature and barometric readings for a given period. (Social Studies, Unit III, Concept A, Related Activity 1) (Social Studies, Unit III, Concept A, Related Activity 2).



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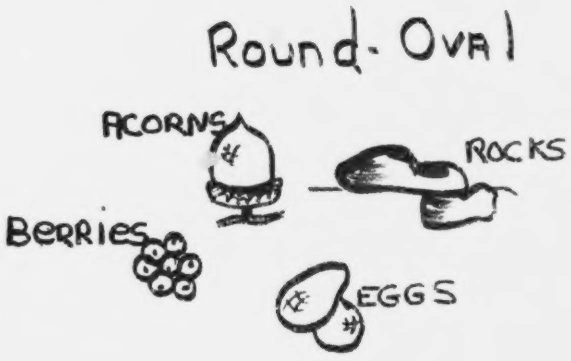
20 H - The Standard Yard
20 I - The Rod
20 O - Systems of Measurement
20 R - Thermometer
20 S - Weight Measurement
20 T - Calendar Measures
20 U - Clock Measures
20 V - Square Measures

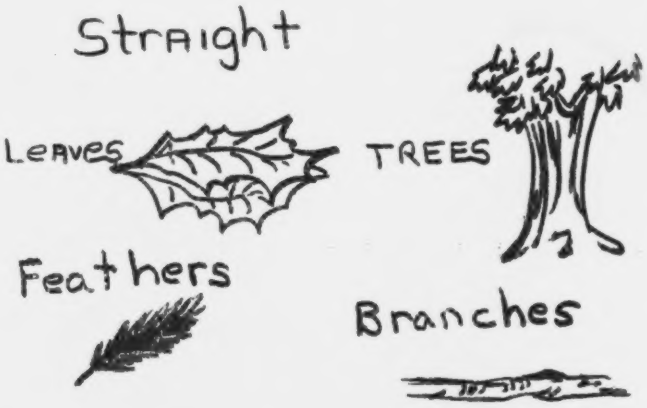
Unit II - Geometry

Concept A **MANY NATURAL OBJECTS HAVE GEOMETRIC SHAPES**

Outdoor Activity:

1. Find and name geometric shapes in given area. Draw pictures using these shapes as a basis.


Round-Oval
ACORNS
ROCKS
BERRIES
EGGS


Straight
LEAVES
TREES
Feathers
Branches

Unit III - Maps

Concept A

MAPS TELL IN PICTURE STORIES THE LOCATION OF PLACES AND THINGS

Outdoor Activities:

1. Use the compass to determine direction.
2. Determine direction of various landmarks from your school yard.
3. Lay a compass trail.
4. Make a map of school site or nearby area.

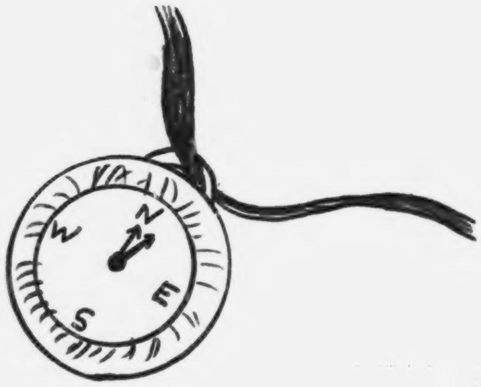
Related Activity:

1. Construct a map from the school grounds to your home. (Social Studies, Unit III, Concept A, Related Activity 3).

BIBLIOGRAPHY:

Films:

Maps are Fun (11 Min.)



Concept A

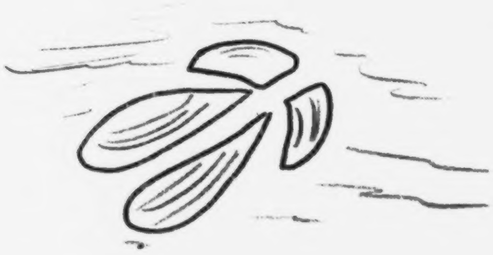
THE USE OF NATURAL ART MATERIALS INCREASES INTEREST IN THE OUTDOORS

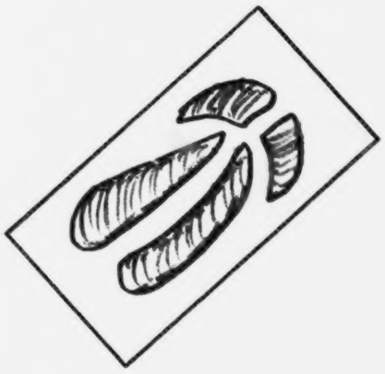
Outdoor Activities:

1. Blue print a plant life collection. (Nature Oriented Activities, Van Der Smissen, Betty and Goering, Oswald, Iowa State University Press)

2. Collect natural materials for a collage.

3. Locate a good track that is clear and sharp in mud, dirt, sand, or snow. Make a plaster cast. Compare the products.





Concept B

NATURE CONTAINS MANY SCENES FROM DRAWING AND PAINTING

Outdoor Activities:

1. Collect native materials to produce colors for painting and drawing.

2. Draw a tree without looking at the paper.

3. Make a light drawing on manila paper. Follow the pencil lines with crayon. Crumble the paper into the smallest possible ball. Smooth out paper. Use water colors, paint over the entire paper with water colors.

4. During a nature walk, point out the various sizes of branches which reach out, spread, and cross out another, and the repeated shapes of leaves. Draw these designs in pen and ink. After sketch has dried, shade with brown and green water color.

5. Make sketches in cartoon style of several natural objects as trees, flowers, plants, or animals.

6. Make a sketch of the same flower or plant. Exhibit the sketches and discuss the variety and range of artistic expression demonstrated.

7. Find smooth, water worn pebbles to make pebble mosaics. (Social Studies, Unit I, Concept A, Related Activity 4).

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Concept A

THE SOUNDS OF NATURE ARE MUSIC IN THE PUREST FORM

Outdoor Activities:

1. Collect objects of nature such as stones, seeds, sticks, gourds, dry grass, hollow reeds, etc., to make different sounds and rhythms. For instance, place acorn caps between the hands and blow on them to produce whistling sounds; shake pebbles in hollow gourds to make rattles; strike sticks against each other to make rhythmical sounds; wave tree branches bearing dried leaves in the air.
2. Imitate animal sounds.

Related Activities:

1. Compose songs based on outdoor experiences.
2. Compose work songs using familiar tunes. Encourage children to pace song to the type of work being done.
3. Draw a sound the way it might be written on paper. Use dots, light lines, dark lines, zig-zag, spirals, straight and wavy lines.

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Grade 5
Health & P. E.
Units I & II

Unit I - Outdoor Safety

(See Unit I - Concept A - Fourth Grade)

Unit II - Food and Nutrition

Concept A

GOOD NUTRITION IS ESPECIALLY IMPORTANT WHEN PEOPLE ENGAGE I IN VIGOROUS OUTDOOR ACTIVITIES

Outdoor Activities:

1. On long hikes, carry "Emergency Rations", small box of raisins, chocolate bar, carrot and apple.

2. Learn proper procedures for cooking in the out-of-doors.

Related Activities:

1. Plan a balanced menu for a cook-out. (See recipes in A Leader's Guide to Nature-Oriented Activities - by Van Der Smissen and Goering. (Science Unit III, Concept E Related Activities 1 and 2) - (Language Unit I , Concept A Related Activity 3).

2. Plan for an adequate, safe water supply for long hikes.

3. Encourage wise selection of snacks at camp store time.

CHOCOLATE
RATIONS

Unit III - Games

Concept A GAMES PROVIDE A PLEASANT WAY TO LEARN

Outdoor Activities:

1. Play "Who Am I?" Have each child write on a slip of paper the name of an animal, tree, or another living thing. Pin the slip on the back of another player. As soon as each player has a slip, each child tries to discover his own identity by asking the other players questions that can be answered "yes" or "no". When a player has discovered who he is, his slip is removed from his back and pinned on the front of him.

2. Play "Hold the Line". A small group of children hike single file. At short intervals, a "challenger" points to some object of nature which the hiker in the lead must identify to "hold the front" of the line. Failure to identify the object sends him to the back.

3. Play "Touch Memory". Have a small group go outside and collect a number of different objects from nature. Have the other children line up and hold their hands behind them. Have one child pass behind the line of players, allowing each player to feel each object to see if he can identify the object.

4. Play "The ABC's of Nature". Go outside and find an object of nature for each letter of the alphabet. The one having the most complete list is the winner.

5. Play "Trees". Players sit in a circle, they are divided into tree teams. The game starts when the leader spells "trees" and points to an individual in the circle. The player must spell a tree that begins with "S". The next player to the left and each succeeding player has to spell a tree with the last letter of the preceeding word. Each time a player can use his letter for the spelling of a tree, his team gets two points. A misspelled word counts no points.

6. Play "Indian Corn Game" (See Bibliography).

7. Play "Capture the Flag" (See Bibliography).

8. Play "Stalking a Deer" (See Bibliography).

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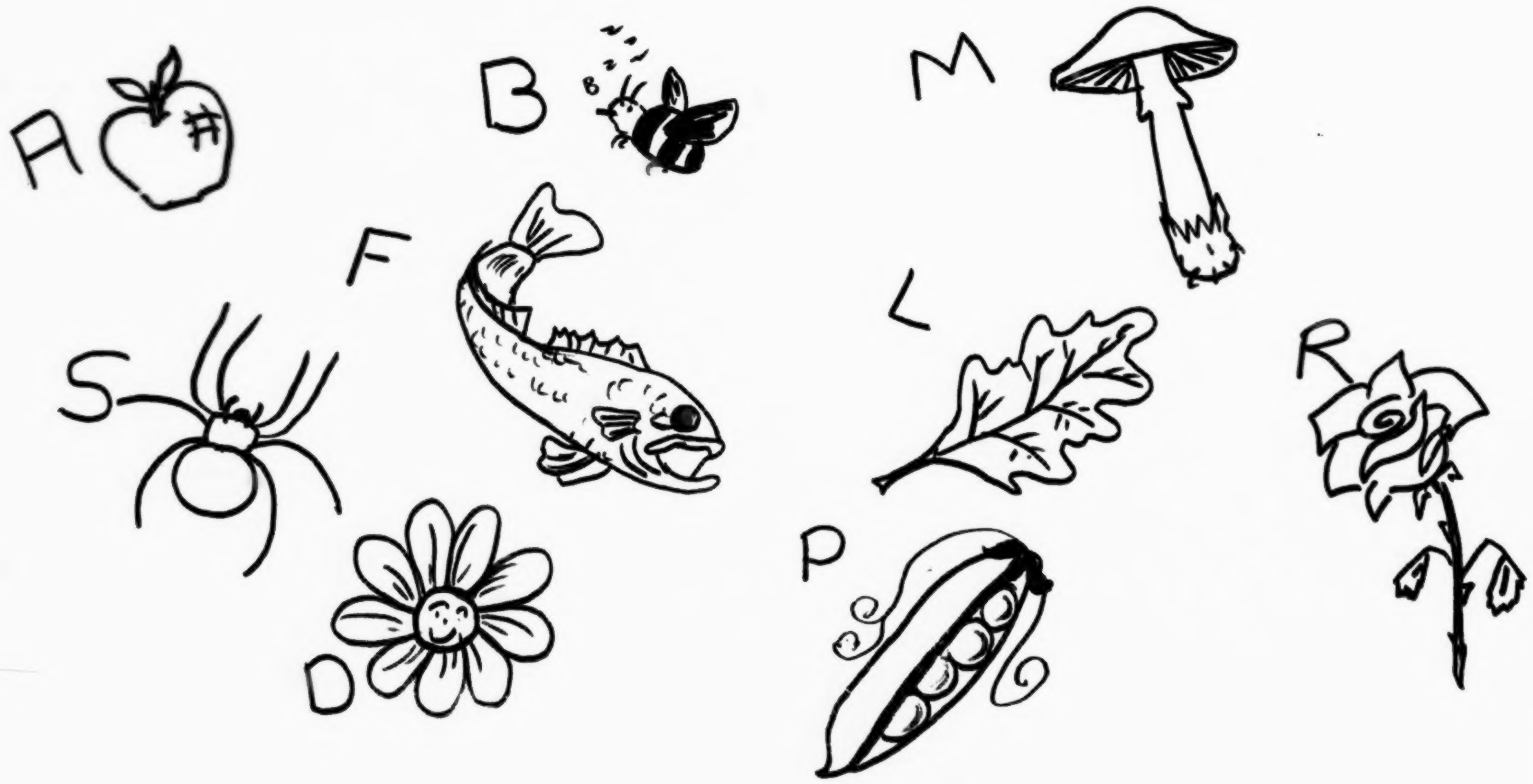


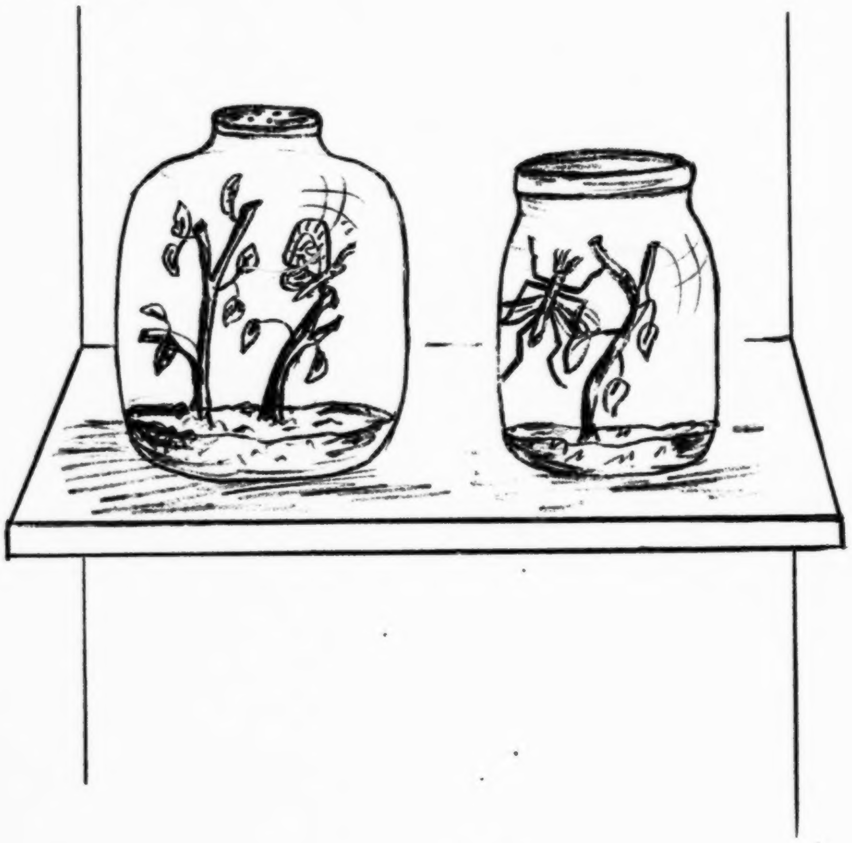
Unit I - Insects

Concept A

THERE ARE MANY KINDS OF INSECTS. THE STUDY OF INSECTS IS KNOWN AS ENTOMOLOGY.

Outdoor Activities:

1. Measure off a one-foot square on a lawn. List the insects found there. (See Lang. Arts, Unit I, Concept A, Outdoor Activity 2).
2. Collect insects from different habitats such as: wood, small streams, flowers, shallow puddles, vacant lot, trees, shrubs, under rocks, rotted log. Group insects according to their habitat.
3. Collect typical insects for exhibit in an insect zoo.
4. Give the class a list of 10 insects. Divide the class into groups for a scavenger hunt. (See P.E., Unit I, Concept A, Activity 5).



Concept B

INSECTS ARE CLASSIFIED ACCORDING TO THEIR BODY STRUCTURE

Outdoor Activities:

1. Examine a grasshopper with a hand lens to find three main body regions: head, thorax and abdomen. On the head look for antennae, compound eyes, and mouth parts. On the thorax look for the six legs and wings. On the abdomen look for the ears and the spiracles.

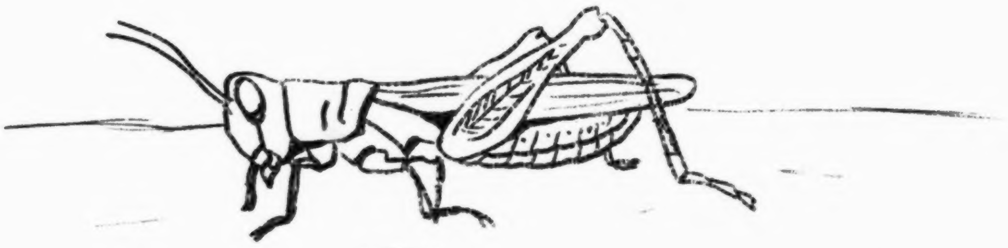
2. Collect a variety of insects to study specialized parts.

    a. Mouth parts - biting and chewing plant food, sucking plant juices and animal blood, scraping and wetting food, sipping nectar from flowers, sucking sap from trees.

    b. Legs - jumping, crawling, swimming, walking on water, burrowing, carrying pollen.

    c. Antennae - knobbed, elbowed, thread-like.

3. Capture several kinds of insects. Place them on a sheet of paper and let them move about. Classify them according to their traveling habits. (crawling, flying, hopping).



Concept C

ARTHROPODS HAVE JOINTED LEGS AND EXOSKELTONS

Outdoor Activity:

1. Search the school ground to find specimens of arthropods. Make lists of things they have in common and things they do not have in common. Compare exoskelton and jointed legs.

Related Activity:

1. Bring examples of other arthropods such as shrimp and crayfish to compare with insects.

Concept D

INSECTS HAVE MANY SELF-PROTECTING ADAPTATIONS

Outdoor Activities:

1. Take a field trip to discover how the insects protect themselves by: coloration, giving off unpleasant odor, giving off smoke screen, pretense, minicry, disagreeable taste, rapid movement, flight, biting mouth-parts.
2. Search school area for insect homes. (See Lang., Unit I, Concept A, Activity 3).

Related Activity:

1. During winter bring a shovelful of sod or leaves into the school room and search for insects.

Concept E

INSECTS UNDERGO METAMORPHOSIS (BOTH) COMPLETE AND INCOMPLETE) AS THEY DEVELOP FROM EGGS TO ADULTS

Outdoor Activities:

1. Collect caterpillars to observe metamorphosis of insects.

2. Search school ground for examples of insects that go through incomplete metamorphosis, such as: aphids, termites, preying mantis, etc.

3. Collect wigglers as examples of mosquito larva.

Related Activities:

1. Compare life-cycle of frog with that of an insect.

2. Examine wigglers under a microscope or hand lens.

Concept F

SOME INSECTS ARE BENEFICIAL TO MAN, OTHERS ARE HARMFUL

Outdoor Activities:

1. Examine areas around the school ground that have been damaged by harmful insects. (Damaged wood affected by the termites and ants.)

2. Visit a farm with beehives and discuss how the bees are useful in cross pollination and in making honey.

3. Examine galls on leaves and stems of plants. Discuss the interrelationship of plants and these insects.

4. Visit a garden or farm to find crop damage caused by insects.

5. Survey the school ground for breeding places of mosquitoes. (See Health, Unit II, Concept A, Activity 1).

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The Earth - Life Nature Library
Butterflies
The Giant Golden Book of Biology

Filmstrips - St. Bethlehem School Library:

Insects: What They Are	Encyclopedia Britannica
Insects: Their Life Cycles	Encyclopedia Britannica
Helpful and Harmful Insects	Encyclopedia Britannica
Social Insects	Encyclopedia Britannica
Some Different Kinds of Insects	Encyclopedia Britannica

Films (Intermediate)

Introducing Insects (17 min., Color)
Metamorphosis - Life Story of Wasp (14 min., color)
Life Story of a Moth - The Silkworm (11 min., color)
Life Story of the Ladybird Beetle (10 min., color)
Butterfly, The (Life Cycle of an Insect) (5 1/2 min., color)
Grasshopper, The: A Typical Insect (5 1/2 min., color)
Honeybee, The: A Social Insect (5 1/2 min., color)
How Insects Help Us (11 min., color)
Insects Enemies and Their Control (11 min., color)
Insects: How to Recognize them (11 min., color)
Typical Garden Spider, A (8 min.)

Film Loops:

Queen Bee Laying Eggs	Walt Disney
Swarm of Bees	Walt Disney
Queen Bee Duel	Walt Disney
Raising a Queen Bee	Walt Disney
Ants Tunnel Building	Walt Disney
Anthill Protection - Part I	Walt Disney
Anthill Protection - Part 2	Walt Disney
Leaf-Cutting Ants	Walt Disney
Centipedes, Millepedes, Scorpions	Walt Disney

Records:

The Songs of Insects - Houghton-Mifflin Company

Unit II - Birds

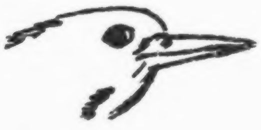
Concept A BIRDS DIFFER IN MANY WAYS

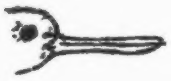
Outdoor Activities:

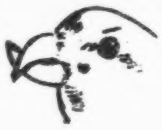
1. Study birds by using binoculars. Observe the differences in beaks and feet. Discuss how these affect the life of the bird.
2. Make a bird clue chart and identify the birds by using the "Six S's". (See Related Activity 1 - below).
3. Observe the most striking colors of various birds when they are perched or flying. Make a record of colors.
4. Listen to records on bird sounds and then go outside to listen for familiar sounds. (See Music, Unit I, Concept A, Activity 2)

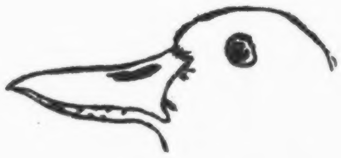
Related Activities:

1. Discuss the "Six S's" of bird identification (size, shading, shape, song, sweep and surroundings) before field work.
2. Make bird models or bird zoo.
3. Use bird flash cards for bird identification.
4. Make a list of birds which have been identified.


WOODPECKER


HUMMING-BIRD


CROSS-BILL


DUCK

Concept B

BODIES OF BIRDS ARE ADAPTED FOR FLYING

Outdoor Activities:

1. Take a trip into field and woods to look for bird feathers. Examine feathers for strength, flexibility, smooth surface and light weight. Discuss how the tail feathers act as a stabilizer, brake, rudder and elevator.

2. Observe flight pattern of different birds. (Soaring, gliding, hovering).

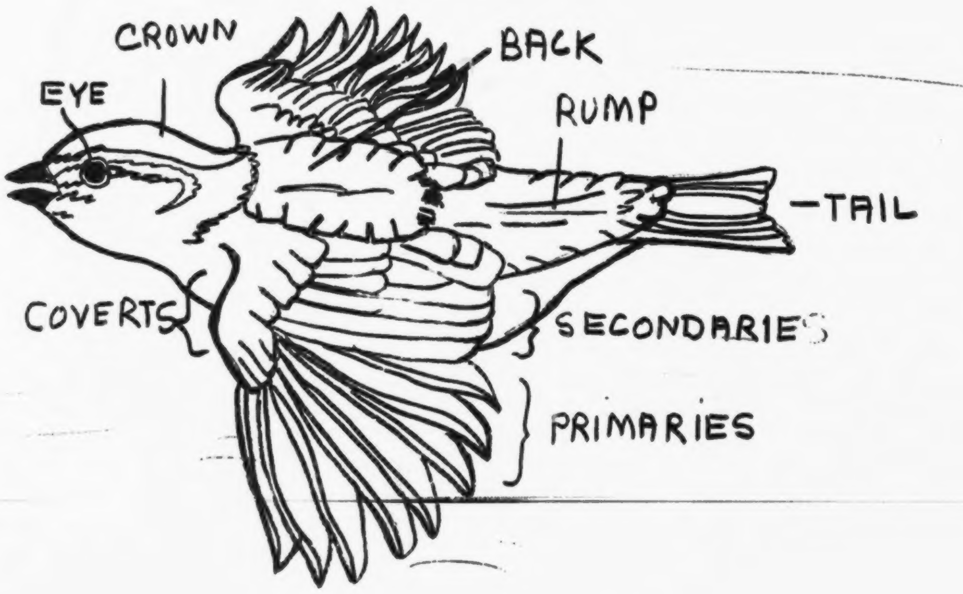
Related Activities:

1. Identify bird parts which are used for flying.

2. Examine the wing and breast of the chicken. Discuss how the wing operates in flying and how the breast muscles operate the wings for flying.

3. Compare the structure of a bird to that of an airplane.

4. Examine pictures of air sacs and lungs. Discuss how they help in flying.



Concept C BIRDS HAVE THREE KINDS OF HABITAT (WOODS, FIELDS AND WATERWAYS)

Outdoor Activities:

1. Examine bird nests in these three areas. Note likenesses and differences.

2. Collect old bird nests and determine kinds of materials used in making the nests. (Be sure nests are not those of birds which reuse their nests).

3. Using nest key, identify nests by their builders. (See P.E., Unit I, Concept A, Activity 4)

4. Record the kinds of birds found in these three areas.

Concept D BIRDS EAT VARIOUS KINDS OF FOOD

Outdoor Activities:

1. Identify some shrubs and trees on which birds feed. Observe and keep a list of the birds that feed on these.

2. Look for birds feeding on insects. Discuss how birds are helpful in destroying harmful insects.

3. Observe beaks of birds. Discuss how the bird's beak is helpful in obtaining food. Examine models of some different beaks.

Concept E

THERE IS A NEED FOR BIRD PROTECTION

Outdoor Activities:

1. Take a field trip to a bird sanctuary.

2. Set up bird feeders for winter feeding. Keep a record of birds feeding there and their food preference.

3. Plant trees, shrubs, flowers which have edible berries and seeds.

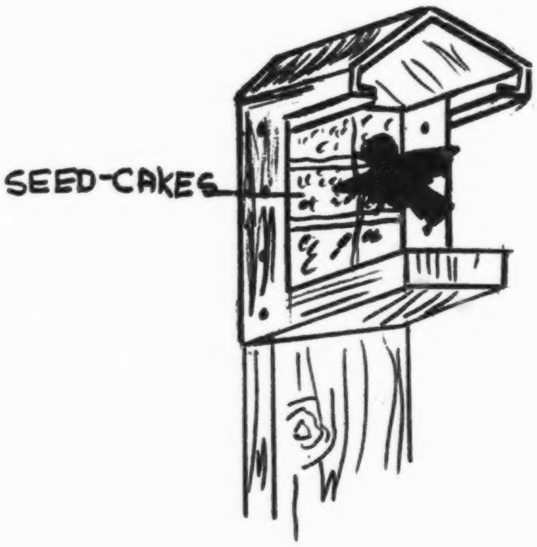
4. Lay out materials such as yarn, wool, cotton, straw, etc. Observe kinds of birds that use these materials.

5. Trap birds for close observation; then release them.

Related Activities:

1. Have a game warden to speak to the class about laws which protect birds.

2. Have bird watchers speak to the class about bird watching as a hobby.



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Birds of Sea and Shore	Encyclopedia Britannica
Birds of the Countryside	Encyclopedia Britannica
Birds of the Garden	Encyclopedia Britannica
Birds of the Northland	Encyclopedia Britannica
Birds of the Tropical Forests	Encyclopedia Britannica
Birds of Villages and Towns	Encyclopedia Britannica
Birds and Their Songs (With record)	Museum Extension Service
Larger Birds of Woods and Gardens	Museum Extension Service
Smaller Birds of Woods and Gardens	Museum Extension Service
Birds of Open Fields and Meadows	Museum Extension Service
Birds of Rivers, Marshes and Sea Shores	Museum Extension Service
How Animals Live in the Air	Educational Projections Corp.

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Adventuring in Conservation	Indiana University
Paradise Polluted	Roy Wilcox Productions, Inc.

Films

Audubon and the Birds of America (16 min., color)
Birds and Their Characteristics (11 min., color)
Birds: How We Identify Them (11 min., color)
Birds in Winter (11 min., color)
Birds of the Countryside (11 min., color)
Birds of the Dooryard (11 min., color)
Birds of the Inland Waterways (11 min., color)
Birds of the Marshes (11 min., color)
Birds of the Sea (11 min., color)
Birds of the Woodlands (11 min., color)
Bobolink and Blue Jay (11 min., color)
Five Colorful Birds (11 min., color)
How Birds Help Us (11 min., color)
Ruby Throated Hummingbird (8 min., color)

Records:

Nature Songs	Argosy Music Corp.
Birds on a May Morning	Droll Yankees
Songs of the Forest	Droll Yankees
Swamp in June	Droll Yankees

Film Loops:

Birds Building Nests	Walt Disney
Birds Feeding Their Young	Walt Disney
American Migratory Birds	Walt Disney
Courting Rituals of Birds	Walt Disney
Bird Tricks for Survival	Walt Disney

Unit III - Soil Conservation

Concept A SOILS ARE A COMBINATION OF MANY THINGS

Outdoor Activities:

1. Collect samples of soil from different areas of school grounds and observe living organisms and organic matter with hand lens. Keep a careful record of things found.

2. Rub different types of rock together to observe size of particles from them. Discuss the length of time involved in the formation of soil.

3. Examine samples of topsoil, subsoil, and parent material taken from the same soil profile. Discuss the differences found in these three samples.

4. Put different types of soil in layers in a jar and add water. Then shake the jar to see which soil particles will settle first. Note layers.

5. Test the soil for acidity and various minerals by using soil testing kit.

6. Punch holes in tin cans. Fill cans with soil containing humus. Fill another can with subsoil. Measure equal amounts of water and pour over the soil. Collect the water that runs through to determine which soil holds water better.

7. Show that soil can be made by chemical action by dropping pieces of limestone in vinegar. Discuss how long it would take for weak acids in soil to break down rock into particles.

8. Take the students to a forest area to observe decaying leaves and wood. Discuss how soil is formed from these materials.

9. Take the students to the mouth of a river or creek to examine the sediment deposited there.

10. Examine roots of clover or alfalfa to find nodules which contain nitrogen-fixing bacteria.

11. Survey the school area for different types and colors of soil.

12. Find rocks with lichens growing on them. Discuss the part they play in soil formation.

Related Activities:

1. Show that soil can be made by heating and freezing by pouring water into a crack in a rock and then placing rock in a freezer. Also heat a piece of rock to show effects of heat. Discuss time needed for these processes.

2. Make a mural map of the school ground to show the kinds of soil found and the differences in color.

Concept B

SOIL IS ONE OF OUR MOST IMPORTANT NATURAL RESOURCES AND A NATIONAL ASSET ON WHICH EVERYONE DEPENDS.

Outdoor Activity:

1. Visit a nearby farm to see how many uses and misuses of the soil can be found.

Related Activities:

1. Discuss with students the number of occupations dependent on the soil.

2. Invite a soil conservationist to speak on importance of soil.

3. Write to conservation department for study and display materials and films.

4. Discuss with class important things we get from crops or livestock.

Concept C

EROSION IS A SERIOUS THREAT TO OUR SOIL

Outdoor Activities:

1. Place spatter boards in a grassy area and a bare area. Compare the amount of soil on each one after a heavy rainfall.
2. Explore the school grounds to find examples of gully erosion. Discuss causes.
3. Collect samples of water from a stream before and after a rainfall. Compare the samples after they have settled.
4. Measure the degree of slope of a hill. Discuss effect on soil loss.

Concept D

MAN MUST UNDERSTAND THE TECHNIQUES OF CONTROLLING EROSION

Outdoor Activities:

1. Explore the school grounds to find examples of gully erosion. Let the class decide through discussion how they would control the erosion. Then let them follow through with their plan.
2. Discuss good farming methods such as: strip cropping, crop rotation, terracing, contour plowing, grass waterways, and cover crops. Then travel to nearby farms to see these practices.
3. Compare barren area and a section with vegetation along a stream. Compare the results of washing.

Related Activities:

1. Fill two trays with fine soil. Cover one tray with sod. Sprinkle the same amount of water over each tray. Determine which tray loses more soil.

2. Fill two trays with fine soil. Use a stick to make furrows up and down in one tray and across the slope in the other tray. Sprinkle each with the same amount of water. Determine which tray loses more soil. (See Hillcourt, W. William - *Nature Activities and Conservation*, pp 376-377)

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Poatgieter, Alice Hermina, Adventure in Conservation, Houghton,

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Conservation	Eye Gate
The Need for Conservation	Eye Gate
Soil and Its Conservation	Eye Gate
The Earth is Always Changing	Eye Gate
Soil Conservation Today (with Record)	Society for Visual Education

Films: (Intermediate)

Understanding Our Earth: How its Surface Changes (11 min., color)
Understanding Our Earth: Soil (11 min., color)
Erosion: Leveling the Land (14 min., color)
Why Do We Still Have Mountains (20 min., color)
Conserving Our Soil Today (11 min., color)

Transparencies:

The Land That Supports Us - Conservation No. 1 (Whole Packet)
Our Soil Resource - Conservation No. 2 (Whole Packet).

Unit IV - Weather

Concept A THERE ARE MANY FACTORS WHICH AFFECT WEATHER

Outdoor Activities:

1. Use a weather vane to determine direction of winds over a period of days and compare the results with a world wind directional map.

2. Observe the different kinds of clouds associated with fronts.

3. Use a thermometer in a shaded area, a sunny area, a closed area, and an open area to show differences in temperature.

4. Identify the type of clouds by using a cloud chart.

5. Observe the sun at a specific location during the different seasons.

Related Activities:

1. Listen to radio and television weather reports to determine what kind of front is in the immediate area. Observe the type of weather associated with the front.

2. Measure changes in atmospheric pressure with a barometer over a period of days. Associate the change in weather with high and low pressure areas. (See Math, Unit II, Concept A, Related Activity I).

3. Use a bottle balloon and hot plate to show how heating and cooling affect air expansion.

4. Fill a metal pitcher with ice and water. Observe the condensation of moisture.

Concept B

VARIOUS WEATHER INSTRUMENTS ARE USED TO FORECAST WEATHER

Outdoor Activity:

1. Use home built weather instruments to measure weather factors outside:

    a. Make a rain guage by using a jar with the same width at the top and bottom to collect rain. Use a ruler to mark the scale on the jar.

    b. Make a wind vane by using a carefully balanced arrow made of light wood and placed on a pivot.

    c. Make an anemometer to measure wind speed by attaching paper cups to the ends of crossed sticks and then attach to a post.

    d. Measure humidity by using dry bulb and wet bulb thermometers. Then use a relative humidity chart to determine humidity.

    e. Compare readings of the home made instruments with the readings of the more scientific instruments.

    f. Make a hair hygrometer to measure relative humidity.

    g. Make a barometer by using a bottle, balloon and straw.

    h. Make a thermometer by using a small glass flask, a one-holed stopper that fits tightly into the flask, a glass tube about 24 inches long, some water colored with red ink, and a candle.

    i. Make a cloud direction indicator by taking a piece of cardboard 6" x 10" and fastening a round mirror in the center. On the cardboard around the mirror, write the directions - south, southeast, southwest, west, north, northeast, northwest, and east. In the middle place a small red dot. On clear days, place indicator on the ground and look into mirror. When you catch a cloud in the mirror, follow it across the red dot and off the cardboard, put finger at the direction that it left the mirror. This is the direction the clouds are moving.

Concept C READINGS FROM WEATHER INSTRUMENTS ARE USED TO PREDICT WEATHER

Outdoor Activity:

1. Set up a weather station and make weather forecasts based on readings of instruments. (See Math, Unit III, Concept A, Activity 2).

Related Activities:

1. Chart weather reports from television on maps to see movement of fronts, location of highs and lows, etc. Check the accuracy of these reports.

2. Collect weather "sayings" and check them for accuracy.

3. Make weather flags and put up a flag each day for a forecast.

4. Visit a weather station.

SUN
+
AIR
+
WATER
=
WEATHER

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Filmstrips - St. Bethlehem School Library:

The Four Season	Eye Gate
Weather Changes	Eye Gate
Air, Wind and Weather	Eye Gate
It's All Weather	Eye Gate
Our Weather	Encyclopedia Britannica

Films: (Intermediate)

The Climate of North America (17 min., color)
Why Seasons Change? (11 min.)
Weather Satellites (15 min., color)
What makes the Wind Blow? (16 min., color)
What Makes the Clouds? (19 min., color)
Climates and The World We Live In (13½ min., color)
How Weather is Forecast (11 min., color)
Let's Learn to Predict the Weather (11 min., color)
Reading Weather Maps (13½ min., color)
Weather: Understanding Precipitation (11 min., color)
Weather: Why it Changes (11 min., color)
Origins of Weather (13 min., color)

Records:

Tom Glazer Weather Songs - Argosy Music Corporation

Unit I - Written Expression

Concept A

THE OUTDOORS STIMULATES CREATIVE EXPRESSION

Outdoor Activities:

1. Take class outdoors. Express reactions to the natural environment by writing Haiku poetry.
2. Select a small area of grass and observe the insect life. Imagine how it would feel to be an insect. Write short stories of events in the life of insects. (See Science Unit I, Concept A, Activity I).
3. Direct pupils: "Observe an ant colony and then pretend that you are an ant in the colony. Describe the life in the colony." (See Science, Unit I, Concept D, Activity 2).
4. Describe interesting sounds, formations, and colors, using: (a) one word, (b) a phrase, (c) one sentence descriptions.
5. Compose poems related to outdoor experiences.
6. Write a story about an object seen through a hand lens.

Concept B

NOTE-TAKING IS USEFUL IN DISCOVERING THE OUTDOORS

Outdoor Activities:

1. Take notes during an outdoor observation period. Follow up with a discussion period and compare notes.
2. Select a plant to describe. Take notes; then write a descriptive paragraph.
3. Find a nature specimen in the woods or field and check it out in a resource book, using field notes.
4. Put headings on five small sheets of paper - one for each of the five senses - allow time during an outdoor experience to jot down the learnings gained from each method of observation.

Unit II - Oral Expression

Concept A

OUTDOOR EXPERIENCES PROVIDE OPPORTUNITY AND MOTIVATION FOR ORAL EXPRESSION

Outdoor Activities:

1. Play outdoor characters.
2. Go to a wooded area and imagine what might have happened a hundred years ago. Create a story by letting one person begin telling the story, stopping him, and letting another person continue.
3. Take a walk in a wooded area. On return to classroom, describe orally what impressed you most.
4. Visit a creek or a river and tell tall tales about the formation of these streams.

Unit III - Vocabulary

Concept A

OUTDOOR EXPERIENCES CAN HELP IN VOCABULARY DEVELOPMENT

Outdoor Activity:

1. Keep a new word chart of words found in outdoor activities.

Related Activities:

1. Have a spelling bee using new words.
2. Define each word by using a variety of resource materials.

BIBLIOGRAPHY:

Filmstrips - St. Bethlehem School Library:

Comparisons	Eye Gate
Words That Describe Things	Encyclopedia Britannica
Classifying	Eye Gate
Observing	Eye Gate

Films:

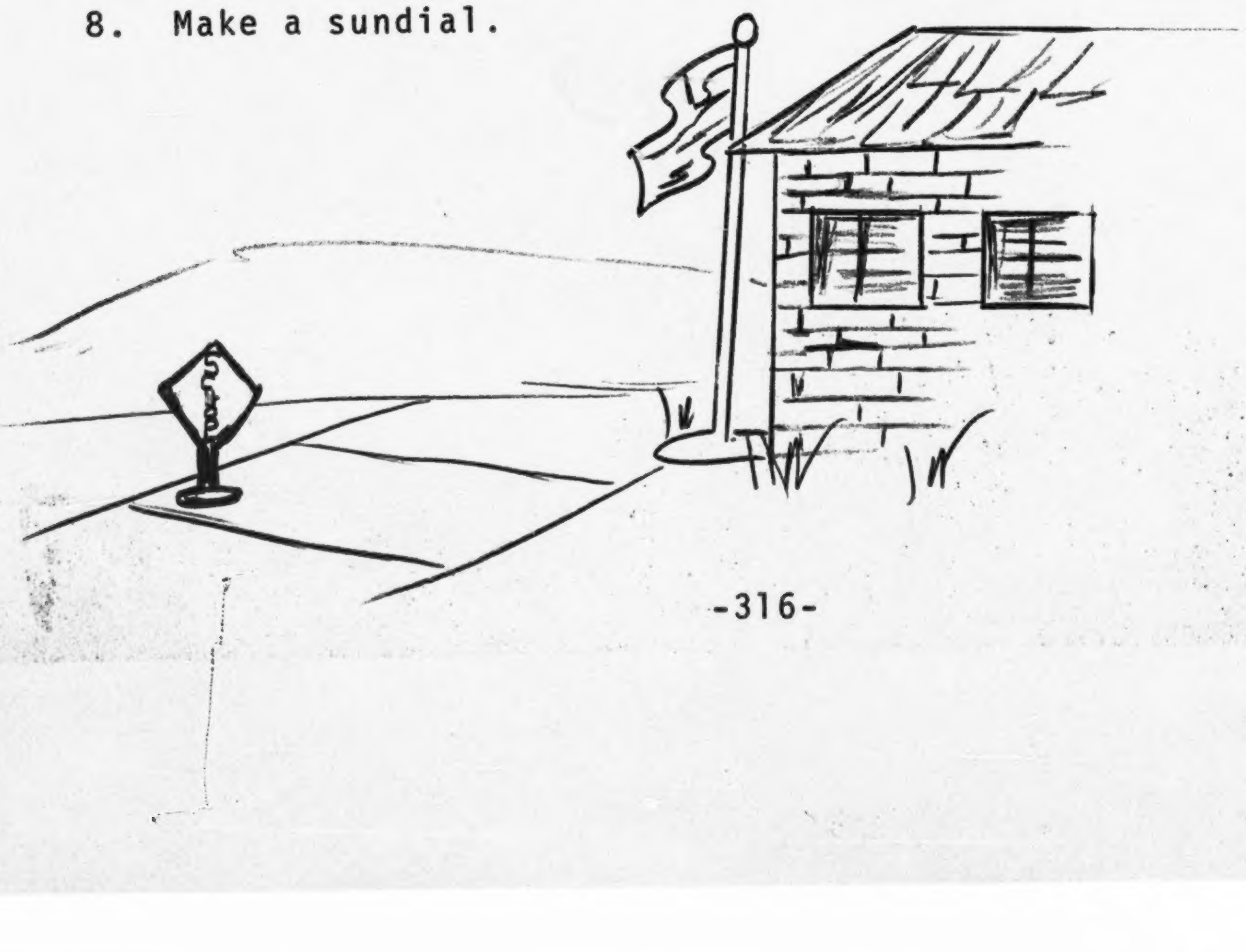
How much can you See (11 min.)
Listen Well, Learn Well (11 min., color)
Story Acting is Fun (11 min., color)
Writing a Report (11 min., color)

Unit I - Measurement

Concept A ESTIMATING IS A WAY OF MEASURING

Outdoor Activities:

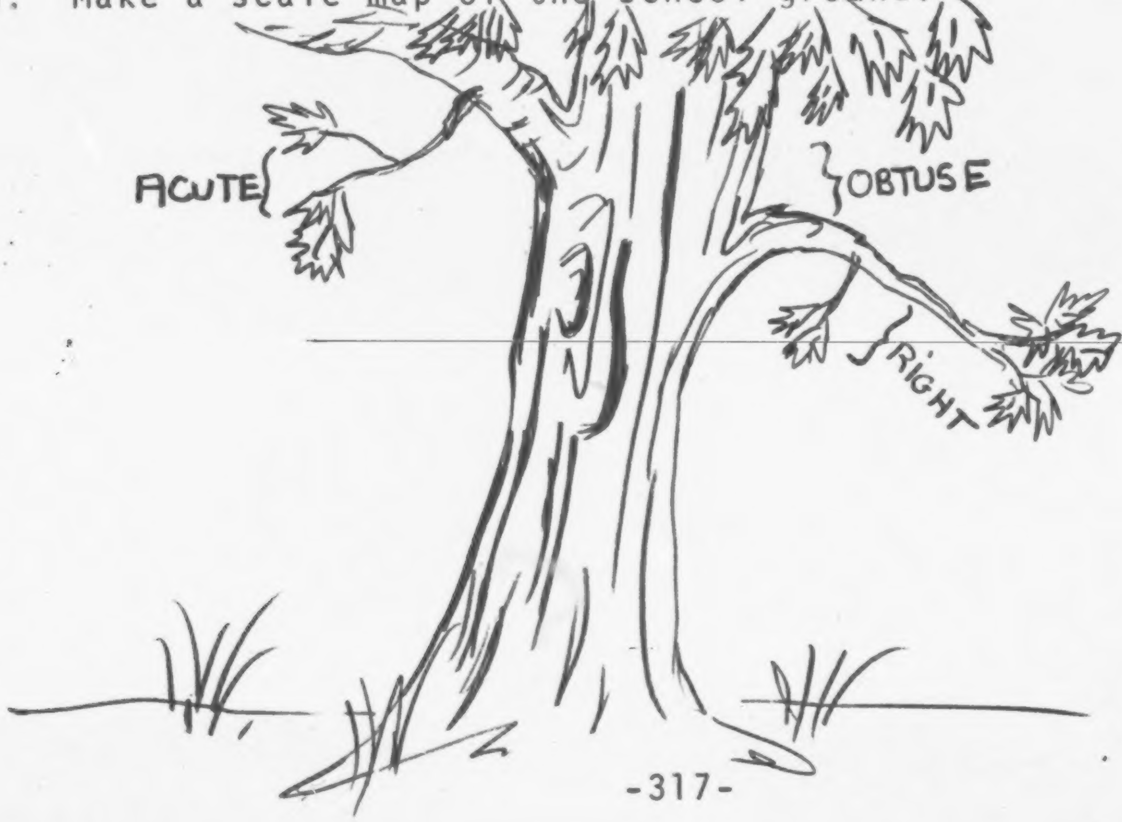
1. Estimate the height of a tree using the child's own height for comparison.
2. Estimate the area of the tennis court or baseball diamond and compare with accurate measurement.
3. Estimate the width of a river.
4. Estimate the height of the school building.
5. Estimate the time of day by using the position of the sun. Draw a circle around a tree at 9:00 as large as tip of shadow and label and circle time. Continue for each hour of school day.
6. Estimate the temperature by listening to a cricket chirp for 15 seconds and add 40. Test it by using a thermometer.
7. Estimate the difference between two points by using sound. (Sound travels at the rate of about 1100 feet per second under normal conditions of temperature and pressure).
8. Make a sundial.



Concept B MEASUREMENT IS EVERYWHERE

Outdoor Activities:

1. Measure the perimeter of the school ground.
2. Measure the circumference of a tree. Use formula pi D to prove pi is 3.14.
3. Go outside to look for different angles such as acute, obtuse or right angles. (See Art, Unit I, Concept A, Activity 2).
4. Make personal measurements, such as length of reach, pace, nose, length of outstretched hand, height.
5. Use a compass to walk the perimeter of an equilateral triangle and try to end up at the starting point.
6. Use an astrolabe or clinometer to measure the angle of a slope.
7. Measure the age of a tree by the ring count.
8. Make a scale map of the school ground.



Unit II - Charts and Graphs

Concept A

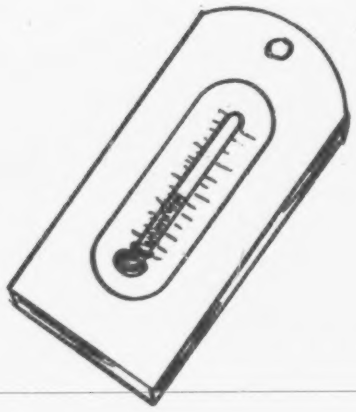
GRAPHING AND CHARTING ARE USEFUL METHODS OF RECORDING

Outdoor Activities:

1. Chart changing of tree shadow in relation to time of day. (See Science, Unit 4, Concept A, Activity 5).
2. Use twine and stakes to lay out geometric figures - measure these and plot them.

Related Activity:

1. Plot readings of temperature and/or barometric pressure for a week. (See Science, Unit IV, Concept A, Related Activity 2).



Unit III - Rate and Ratio

Concept A COMPARISONS CAN BE MADE BY USING RATE AND RATIO

Outdoor Activities:

1. Figure the height of a tree by using ratio of its shadow to the shadow of a stake of known height.
2. Average the temperature readings for a period of time. (See Science, Unit IV, Concept C, Activity I).
3. Count the number of trees in a specified area. For each kind of tree figure the fractional part of the total number.

Related Activity:

1. Invite a bank employee to come to the classroom and discuss types of interest.

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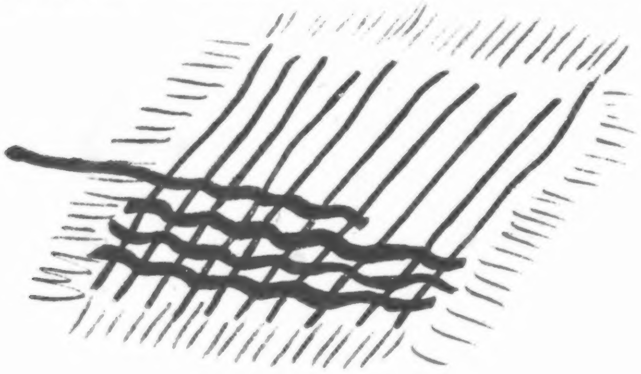
Language of Graphs, The (13½ min., color)
Measurement (11 min., color)
Measuring Areas: Square, Rectangles, (11 min., color)
Story of Measuring Time, The: Hours, Minutes, Seconds (11 min., color)
Story of Weights and Measures (11 min., color)
Maps are Fun (11 min., color)

Concept A

NATURE IS A STOREHOUSE OF ART

Outdoor Activities:

1. Make a charcoal sketch using wood charcoal from a fire.
2. Find designs in nature - such as lines, circles, squares. Draw these designs. (See Math, Unit I, Concept B, Activity 3).
3. Observe the different shades of color in nature during the Fall or Spring and use these colors to draw abstract pictures.
4. Collect grasses, weeds, seeds, and pods to create nature pictures. (See Music, Unit I, Concept A, Activity I).
5. Gather plants, bark, roots, seeds, and clay to make natural paints and dyes.
6. Gather seeds to make jewelry.
7. Gather natural materials such as leaves, flowers, and pebbles to embed in liquid plastic for key chains and paper weights.
8. Use grasses, vines and other vegetation to weave mats.
9. Gather natural materials to make mobiles.



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Images from Nature (7 min., color)
Let's Draw with Crayons (11 min., color)
Let's Paint with Water Color (11 min., color)

Concept A — MUSIC IS FOUND IN NATURE

Outdoor Activities:

1. Collect many articles from nature such as: stones, twigs, small logs, seeds, grasses. Produce as many sounds as possible from these. (See Art, Unit I, Concept A, Activity 4).

2. Listen to sounds outside. Move in rhythm with these sounds. (See Science, Unit II, Concept A, Activity 4)

Related Activity:

1. Compose a song about a day of experiences outdoors.

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Sounds Around Us	Eye Gate
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Geyser Melodies (Bailey, 11 min., color) - Stresses Uniting Arts and Nature)

Records:

The Swamp in June	Droll Yankees
The Songs of Insects	Houghton-Mifflin
Songs of the Forest	Droll Yankees
Birds on a May Morning	Droll Yankees
Voices of the Night	Houghton-Mifflin

Unit I - Water

Concept A

ALL WATER IN THE GROUND IS NOT SAFE FOR DRINKING

Outdoor Activities:

1. Collect water from a deep well, spring, shallow well, river, and pond. Examine through bioscope.
2. Note differences in the smell of the samples.

Concept B

MOST WATER CAN BE MADE SAFE

Outdoor Activities:

1. Visit sewage disposal plant on school ground.
2. Visit city pumping station to learn what processes the water from the river must go through before it is safe.

Related Activities:

1. Purify water by using chlorine tablets.
2. Boil water to kill germs.
3. Note differences in taste of boiled water and discuss reason for this.
4. Write to the State Department of Health for material on testing of water, the best location for a well, and where to build a septic tank.

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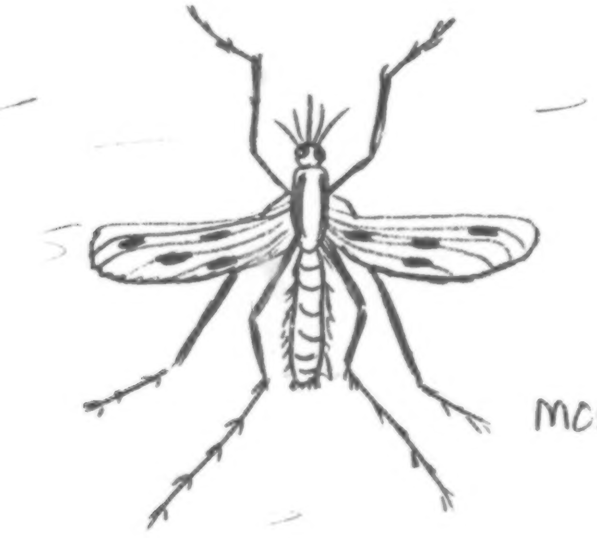
Unit II - Disease Carriers

Concept A

DISEASE-CARRYING INSECTS NEED TO BE CONTROLLED

Outdoor Activities:

1. Search the school grounds for breeding places of flies and mosquitoes. Destroy breeding places. (Science Unit I, Concept F, Activity 5).
2. Pour oil on stagnant water to show the control of mosquito larvae.



MOSQUITO

Unit III - Safety

Concept A

TO ENJOY THE OUTDOORS ONE MUST BE AWARE OF SAFETY MEASURES

Outdoor Activities:

1. Identify poison ivy.
2. Demonstrate how to carry and use tools.
3. Discuss how to make camp fires. Practice outside.
4. Survey school grounds for hazards.

Related Activities:

1. Learn first aid measures.
2. Identify poisonous snakes, spiders, and insects.
3. Invite a law enforcement officer to discuss highway safety.

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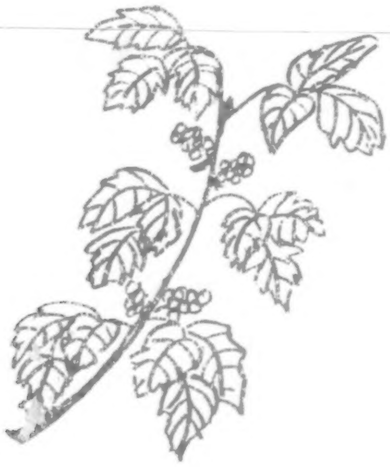
Filmstrip - St Bethlehem School Library:

Playing Safely	McGraw-Hill



POISON IVY

Unit IV - Physical Education

Concept A

NATURE ORIENTED GAMES WILL HELP YOU BECOME PHYSICALLY FIT

Outdoor Activities:

1. Play the tree tag game. One or more persons are "it". Players are safe only when they are touching a designated tree. The persons who are "It" may change the tree that is safe.

2. Have each member of the class cut and decorate his own stick. Sticks should be about 1" thick and 4½" - 5" long. Have the players line up at a starting line, sticks at their feet. At a signal, each tries to get to a finish line first by kicking his stick.

3. A compass bearing is taken and followed to the destination desired. Objects in the path must be climbed over or under or pushed through.

4. Divide the group into teams. In a limited time, see which group can locate the most bird's nests in a certain length of time. Do not disturb the nests. (See Science, Birds, Concept C, Activity 3).

5. Divide class into groups and give each group a particular object to find outdoors. After a group has found the object, assign another object to be found. The group finding the most objects wins the game. (See Science, Unit I, Concept A, Activity 4).

6. Divide class into groups and give each group a map to be followed to a designated point. The first group to reach the designated point wins. Certain nature objects may be picked up along the way.

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END
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